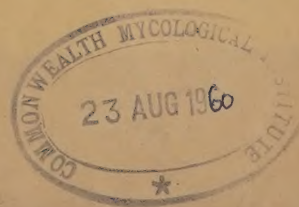
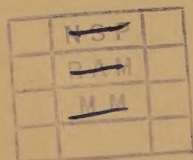


THE SUGAR MANUFACTURERS' ASSOCIATION
(of Jamaica)
LIMITED

Mandeville, Jamaica, W.I.

ANNUAL REPORT
OF THE
RESEARCH DEPARTMENT
1958



CORRIGENDA - ANNUAL REPORT 1958.

Pages 12 & 13. In Tables XI and XII, United States should read "United Estates".

Page 89. Insert 2.60 for Pol % Bagasse 1957.

Page 91. In Table VII add footnote - "Evaporators at Worthy Park and Appleton are Quintuple Effects."

Page 95. Insert 165 instead of 225 for the Heating Surface of Bybrook Evaporator; and 675 instead of 738 for the capacity of Sevens' Water Cooled Crystallizers; add 142 for the area of Sevens' Crystallizers.

Page 99. In Table VII, insert 90.03 for 92.36 under Time Grinding % Gross Grinding Time for Frome.

Page 99. For Table VIII, the heading should read "Factory Stoppages and Time Grinding % Nett Grinding Time".

THE SUGAR MANUFACTURERS' ASSOCIATION
(of Jamaica)
LIMITED

Mandeville, Jamaica, W.I.

ANNUAL REPORT

OF THE

RESEARCH DEPARTMENT

1958

CONTENTS

	PAGE
A. INTRODUCTION	1
B. PRODUCTION	3
STALING OF CANE	3
C. CLIMATE	6
RAINFALL PROBABILITY	6
D. IRRIGATION	7
E. CULTURAL AND MISCELLANEOUS STUDIES	7
ROOT STUDIES	7
CULTIVATION EXPERIMENTS	7
TRASH BURNING AND NITROGEN	7
SPACING	7
THE MERITS OF DIFFERENT LAND FORMS FOR IRRIGATION	7
THE EFFECT OF INFIELD TRANSPORT ON YIELD	8
THE VALUE OF TRASH TURNING AND FORKING AT FROME	8
THE EFFECT OF BAGASSE ON HEAVY CLAY SOILS	8
LIME AND GYPSUM	8
F. NUTRITION	9
NUTRITION INVESTIGATIONS IN THE FIELD	10
(a) TRACE ELEMENT INVESTIGATIONS	11
(b) SULPHATE OF AMMONIA <i>vs.</i> UREA	11
(c) METHOD OF APPLICATION OF SULPHATE OF AMMONIA	12
(d) LEAF COMPOSITION SURVEY	12
PHOSPHATE	14
POTASH	14
G. VARIETIES	14
DISTRIBUTION	14
FINAL STAGE TRIALS	16
(i) B47' AND B51400 (= 1ST 500) SERIES	16
(ii) B49', B50', B52400 (= 2ND 500) SERIES, H37/1933, NCo 310	18
LATTICE TRIALS	18
(i) B51' AND B51400 (= 1ST 500) SERIES	18
(ii) B52' AND B52400 (= 2ND 500) SERIES	18
(iii) B53' SERIES AND FOREIGN VARIETIES	18
(iv) BJ54' SERIES	18
(v) B54' SERIES, Q AND CP VARIETIES	18
QUALITATIVE ASSESSMENT OF VARIETIES	18
PROPAGATION NURSERIES	18
PRE-LATTICE SELECTION PROGRAMME	21
QUARTER CHAIN ROW NURSERIES	21
(i) B53' AND BJ56' SERIES	21
(ii) B55' AND BJ58' SERIES	21
(iii) B54' AND B57' SERIES	21
FIVE STOOL NURSERIES	21
(i) B55' SERIES	21
(ii) BJ58' SERIES	21
(iii) BJ56' SERIES	21
(iv) BJ59' SERIES	21
SINGLE STOOL NURSERIES	21
(i) B57' SERIES	21
(ii) BJ60 SERIES	21

NEW INTRODUCTIONS	21
(i) B58' SERIES	21
(ii) MISCELLANEOUS VARIETIES	21
H. DISEASES AND PESTS	21
NEMATODE SITUATION	21
WEST INDIAN CANE FLY (<i>Saccharosydne saccharivora</i>)	23
SUSPECTED BACTERIAL INFECTION	23
RATOON STUNTING	23
SUSCEPTIBILITY OF COMMERCIAL AND PROMISING VARIETIES	26
I. CHEMICAL LABORATORY	26
J. FACTORY DATA	26
K. LIVESTOCK DIVISION	26
INTRODUCTION AND SUMMARY	26
GENERAL	28
L. ACKNOWLEDGEMENTS	34
APPENDIX I—CANE YIELD SURVEY	35
SURVEY BY YEARS	
ISLAND CANE CROP FOR PAST 10 YEARS (1948-57)	35
ACREAGE REAPED BY EACH ESTATE FOR PAST 10 YEARS (1949-58)	35
TONS CANE PER ACRE BY ESTATES FOR PAST 10 YEARS—ALSO 10-YEAR AVERAGE	36
TONS CANE PER TON THEORETICAL 96° SUGAR BY ESTATES FOR 1954-58	36
TONS THEORETICAL 96° SUGAR PER ACRE BY ESTATES FOR 1954-58	37
CWT. THEORETICAL 96° SUGAR PER ACRE PER MONTH BY ESTATES FOR 1954-58 (EACH FIGURE ALSO BEING EXPRESSED AS A PERCENTAGE OF THE ISLAND AVERAGE IN THE SAME YEAR AND AS A PERCENTAGE OF THE AVERAGE FOR ITS ECOLOGICAL GROUP IN THE SAME YEAR)	37
VARIETY DISTRIBUTION BY YEARS:	
TOTAL ACREAGE UNDER VARIETY % TOTAL ACREAGE REAPED BY ESTATES FOR 1954-58	38
PLANT ACREAGE UNDER VARIETY % TOTAL ACREAGE REAPED BY ESTATES FOR 1954-58	40
SURVEY OF VARIETIES FOR EACH ESTATE FOR 1958:	
TONS CANE PER ACRE FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS	41
TONS CANE PER TON THEORETICAL 96° SUGAR FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS	41
TONS THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS	42
CWT. THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS	42
COMPARISON OF VARIETIES SHOWING ACTUAL YIELDS AND EXPRESSED AS A PERCENTAGE OF B4362	43
SURVEY BY CANE CLASS FOR EACH ESTATE FOR 1958	
TONS CANE PER ACRE BY CANE CLASS FOR ESTATES	43
TONS CANE PER TON THEORETICAL 96° SUGAR FOR ESTATES BY CANE CLASS	44
TONS THEORETICAL 96° SUGAR PER ACRE FOR ESTATES BY CANE CLASS	44
PERCENTAGE ACREAGE REAPED IN EACH CANE CLASS FOR ESTATES AND ECOLOGICAL GROUPS (AND AVERAGE LENGTH OF GROWTH IN MONTHS)	45
CWT. THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR ESTATES BY CANE CLASS	46
FERTILIZER SURVEY:	
ACRES FERTILIZED % TOTAL ACRES REAPED FOR PLANTS AND RATOONS BY ECOLOGICAL GROUPS, 1954-58	46
PERCENTAGE ACREAGE FERTILIZED WITH NITROGEN FOR EACH CANE CLASS, 1954-58	47
AVERAGE LB. PER ACRE N, P ₂ O ₅ AND K ₂ O APPLICATIONS FOR PLANTS AND RATOONS BY ECOLOGICAL GROUPS, 1954-58	47

APPENDIX II—EXPERIMENT DATA

PART I—RESULTS OF FERTILIZER EXPERIMENTS	48
(a) FORMAL AND DISPERSED BLOCK EXPERIMENTS	48
(b) MISCELLANEOUS FERTILIZER EXPERIMENTS	51
(i) TYPES OF NITROGEN	52
(ii) ARTIFICIAL AND ORGANIC AND/OR LIMING	53
(iii) OTHER MATERIALS	54
PART 2—NUTRITION EXPERIMENTS	55
(a) TRASH BURNING x NITROGEN EXPERIMENTS	55
(b) NUTRITION PLOTS	56
PART 3—RESULTS OF VARIETY EXPERIMENTS	68
COMPARISON OF COMMERCIAL VARIETIES	68
VARIETY SELECTION EXPERIMENTS	
LATTICE TRIALS—PLANTS—B52's AND 4TH 500	facing page 69
" " " BJ54's	70
" " " B53's AND FOREIGN VARIETIES	71
" " " B54's AND FOREIGN VARIETIES	72
FINAL TRIALS—PLANTS, BJ49's, 50's AND 2ND 500	73
PART 4—CULTIVATION	76
PART 5—CULTIVATION x DRAINAGE EXPERIMENTS	85
PART 6—DISEASE EXPERIMENTS	87

APPENDIX III—FACTORY AND DISTILLERY DATA 89

PART 1—FACTORY DATA COMPARED BY CROPS (1954-58)	89
JUICE QUALITY	89
MILLING	89
LIME CONSUMPTION	89
HEATERS	90
FILTRATION	90
EVAPORATION	91
CENTRIFUGING	92
TIME ACCOUNT	92
CHEMICAL CONTROL	93
CANE QUALITY	93
PART 2—FACTORY DATA 1958 CROP	94
EQUIPMENT DATA	94
STATIONS CAPACITIES	95
QUANTITIES	96
ANALYTICAL DATA	97
CONTROL DATA	98
TIME ACCOUNT	99
PART 3—DISTILLERY DATA 1958 CROP	100
CAPACITIES	100
QUANTITIES	101
ANALYTICAL AND CONTROL DATA	102

THE SUGAR MANUFACTURERS' ASSOCIATION (of Jamaica) LIMITED
RESEARCH DEPARTMENT

ANNUAL REPORT, 1958

A. INTRODUCTION AND SUMMARY

1. The Director was on overseas leave between 8th July and 26th September in the course of which he visited various agricultural research centres in the United States, Canada and the United Kingdom.

2. In December the Director attended the Advisory Committee Meetings of the British West Indies Central Sugar Cane Breeding Station and the British West Indies Sugar Research Scheme which were held in Barbados.

3. The Director had discussions with Dr. Spensley of Tropical Products Institute and Dr. Forsyth of the Colonial Microbiological Institute, Trinidad, in connection with the future role of the Institute.

4. Mr. M. E. Shaw of McGill University and the University of Manitoba joined the staff as an Agronomist on 17th October, 1958.

5. Mr. K. E. Newman, Agronomist at United Estates spent 3 months working in this Department acquainting himself with the various research projects in hand and techniques used.

6. Mr. J. Walker, Agronomist attached to Worthy Park visited the Department for two weeks in connection with the analysis of data for experiments connected with that Estate.

7. Mr. W. S. Wise, Director of the British West Indies Sugar Research Scheme, Trinidad, spent two weeks in Jamaica touring sugar factories and discussing technological problems.

8. Mr. G. C. Stevenson and Mr. D. I. T. Walker, Senior and Junior Geneticist respectively of the British West Indies Central Sugar Cane Breeding Station visited the Department and various estates, and had discussions on the breeding policy and selection methods.

9. Professor T. Wallace, former Director of Long Ashton Research Station, and Professor Audus of London University visited the Department.

10. The Chairman and ten members of the Sugar Research and Marketing Advisory Committee of the United States Department of Agriculture visited the Department and some sugar estates to study recent advances in sugar cane agriculture and particularly variety selection.

11. Seven delegates from Taiwan headed by Mr. J. C. Huang visited the Department and had discussions on various aspects of sugar cane agriculture.

12. Messrs. Hassan, Decarri, Fanton and Bigi of the Italian Somaliland visited the Department for the purpose of obtaining the latest information on variety and nutrition of cane in the island.

13. Dr. Aughtry, and Mr. T. O. Ellis and Mr. P. Rohrig of La Romana Corporation also visited the Department.

14. Dr. T. R. Clacken joined the staff as the third veterinary officer of the Livestock Scheme which is being administered by this Department.

15. Monymusk demonstrated their mechanical loading equipment and bulk store to an appreciative gathering of delegates from nearly all sugar estates at a successful Field Day held in July under the auspices of the Jamaican Association of Sugar Technologists.

16. Factory representatives attended tours organised by the J.A.S.T. to Seprod Limited, and Captain Morgan Distillers (Jamaica) Limited on 9th September, and to Jamaica Concrete Products Limited, Caribbean Cement Company Limited, the Hunts Bay Power Plant of the Jamaica Public Service Company Limited on 14th October.

17. Members of the accounting section of the J.A.S.T. were afforded the opportunity of witnessing a demonstration of machine accounting at Bybrook through the kindness of the management of United Estates Limited.

18. The Sectional Meetings of the J.A.S.T. were held at the Research Department, Mandeville, on 24th and 25th November and the Annual Conference on 26th November at the University College of the West Indies. The following papers were presented by members of the Department:—

"Yield Decline on Parts of Worthy Park," by R. F. Innes, P. D. Manser and G. F. Clarke.

"Urea vs. Sulphate of Ammonia," by H. M. Thompson.

"The Use of Gypsum as a Soil Amendment Agent at Sevens," by I. R. Cowan.

"Ratoon Stunting Disease," by C. E. M. Smith and P. D. Manser.

"Variety Situation," by C. E. M. Smith.

19. Members of the staff gave a series of lectures on sugar cane agriculture and sugar manufacture to the graduating class of the Jamaica School of Agriculture. The topics included irrigation control, variety selection, nutritional studies, pests and diseases and the processing of sugar.

20. New offices and laboratories for this Department are under construction on the present site to replace the existing temporary structures.

21. A total of 3,237,218 tons cane were ground, of which 3,221,391 tons were used to manufacture the equivalent of 339,094 tons of 96° sugar at an average figure of 9.50 tons cane per ton 96° sugar. Of this, estates produced 1,984,174 tons cane or 61.3% of the island total at an average production level of 31.5 tons cane per acre on 63,048 acres.

22. Analysis of Cane Yield Survey returns for all sugar estates was continued. Adverse weather had a depressing effect on juice quality and was a contributory factor to the lower rate of productivity of 5.81 cwt. sugar per acre per month. Nevertheless, Worthy Park, United Estates and New Yarmouth produced sugar at a higher rate than in 1957. This was a particularly noteworthy achievement on the part of Worthy Park and United Estates because of their exceptionally fine 1957 performances, and in addition the average age of Worthy Park's cane reaped was only approximately 10 months. Barnett, Frome, Jamaica Sugar Estates and Monymusk deserve mention also, as they produced at a rate in excess of 6.0 cwt. sugar per acre per month in a low yielding year.

23. Mean monthly rainfall figures for each estate were calculated and circulated to the Industry. The figures for the past 3 years are presented in this report and an appraisal of the overall effects of rainfall during 1958 made.

24. Rainfall probability curves were derived for two stations at Frome and three stations at Monymusk. An estimate of the amount of rainfall to be expected in any month with a given probability may be obtained from these diagrams.

25. Three hundred and sixty-five full scale field experiments were operated, and in addition micro plots on 112 fields were reaped. This does not include the operation of two nurseries of about 35,000 sugar cane seedlings.

26. The indications, previously recorded, that planting on the bank on heavy clay soils was as good as planting in the furrow and subsequent moulding, have been confirmed. Planting two rows on a large bank continue to give slightly lower yields than the other two methods of planting.

27. Gypsum applied to the sub-surface of heavy marine clays at Sevens has resulted in appreciable increase in cane yields. These studies are to be extended to other areas, and will be carried out in conjunction with different forms of cultivation. The tillage treatments will be so arranged as to permit the evaluation of coarse *vs.* fine tilth, and deep *vs.* shallow cultivations.

28. An intensive survey of the nutritional status of fields of sugar estates was carried out by chemical analyses of the leaf material taken from about a third of all the fields. Recommendations on this basis have been forwarded to estates.

29. Further work has shown that there is no real difference between sulphate of ammonia and urea as

sources of nitrogen supply, but the study of biuret effect is inconclusive.

30. Results of experiments on methods of application of sulphate of ammonia at Caymanas, Frome, and Monymusk indicate that cane yields are hardly affected if sulphate of ammonia in equal quantities is applied near the cane stool as is normally practised, dibbled or broadcast. Extra application of this material when the cane is 6 months old at Monymusk was beneficial in only one out of three trials.

31. No responses were obtained to trace elements at Caymanas and Frome in the plant crop. It appears, however, that dressings of some of these materials may result in increased yields at Vale Royal.

32. Investigation into the decline of yield on certain fields at Worthy Park has shown that applications of DD or Chlordane will improve yields in these areas. Nemagon, Ethylene di-bromide and Dieldrin also produced appreciable benefits.

33. Estimates of the losses of sugar sustained when cane is milled at different lengths of time after harvest was the subject of an investigation, which was so designed to determine the effects of staling on burnt and unburnt cane and on B41227 and B4362.

34. A comprehensive series of trials was laid out on all estates to observe the effects of Nemagon and DD. Leaf weights of these experiments were taken when the cane was 5 months of age, and analysis of these figures showed that little response is to be expected.

35. A serious outbreak of West Indian Cane Fly (*Saccharosydne saccharivora*) occurred at Monymusk. The infestation covered about 4,000 acres and spread to New Yarmouth where about 200 acres were involved.

36. Arrangements have been completed for laying out irrigation trials at Frome to assess the benefits of irrigating cane during the dry period.

37. A plastic lysimeter has been installed at Worthy Park, and appears to be working satisfactorily.

38. Root studies were continued and an intensive survey of pits dug at Frome, Jamaica Sugar Estates and Rose Hall was carried out.

39. Nematode counts and identification are being conducted in close co-operation with Dr. R. Latta, Nematologist, attached to the United States Operations Mission.

40. A leaf drying condition of one of the 3rd 500 variety importations from Barbados and B4362 was investigated in collaboration with the Botany Department of the University College of the West Indies. No pathogenic bacteria were isolated.

41. The first ratoon yields of trials being conducted to ascertain the effects of infield transport, suggest that greatest returns are obtained from plots further away from the interval, the yields decreasing with decreasing distance from the interval. Overall, there has been no serious damage on drawbeds from infield transport.

42. Estates continued the extension of the newer varieties, and in 1958 the area reaped contained 70% of these varieties—B41227 (34%), B42231 (11%) and

B4362 (25%)—which again outyielded all other varieties. A more accurate assessment of the popularity of these varieties is the % acreage planted to each of them, and the 1958 harvest shows that 38% of the plant acreage was devoted to B41227, 10% to B42231 and 33% to B4362.

43. The pol of each parcel of sugar shipped from each estate was determined, and reports of analyses submitted to the Sugar Manufacturers' Association of Jamaica, Head Office, within 7 days of receipt of samples.

44. Weekly and final factory reports were collected, checked, tabulated and circularized to the Industry. The data are summarized in Appendix III.

45. The help and co-operation of all estates in our investigations are gratefully recorded.

B. PRODUCTION

The island suffered a serious setback in sugar production and 26,175 tons less sugar were made compared with the 1957 crop. This was a result of grinding 152,636 less tons of cane with poorer juice quality, 9.50 tons cane being required to manufacture a ton of 96° sugar as against 9.26 in 1957. The average production per estate fell to 3.48 tons 96° sugar (theoretical) per acre, and although the growing period was half a month shorter than in 1957, the decline in rate of productivity per acre per month was still appreciable, being 5.81 to 6.28. The latest 5-year moving average for productivity is 6.22 cwt. sugar per acre per month (the figure predicted in last year's report was 6.25) and it is expected that the figure after next crop will be of the order of 6.20. These trends are given in Figure 1.

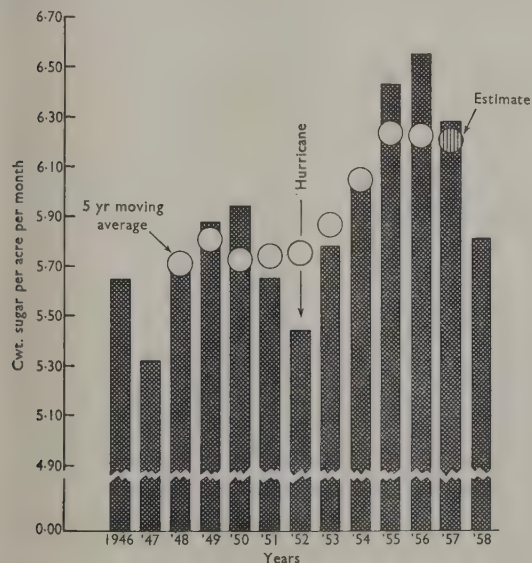


FIGURE 1

Cwt. sugar per acre per month for 1946-58 and 5-year moving averages

The disappointing crop may be attributed primarily to unfavourable weather conditions. Under "Production" and "Climate" in last year's report it was suggested that the severe 1957 drought would have an adverse effect on the 1958 crop, and this proved to be the case, as cane tonnage dropped from 34.3 to 31.5 tons per acre. January rains sent the crop off to a bad start as far as juice quality was concerned, and heavy May and June rains resulted in such a serious deterioration of juice quality that some estates had to terminate their crop, leaving cane to stand over for the 1959 crop. Worthy Park and United Estates were able to complete their crops without being seriously penalized by rains, and once again topped the estates in rate of sugar production.

Staling of cane

Work was carried out in collaboration with members of the staff of Monymusk to assess the losses incurred when cane is cut and left for varying lengths of time in the field. The trial was conducted on B41227 and B4362 and on burnt and unburnt canes. Examination of the results shows that burnt cane appears to keep as well as unburnt cane under the conditions of the experiment. The loss of Pol that might be sustained from cane which has been cut and milled after varying periods is summarized for the two varieties in Table I and illustrated in Figure 2 below.

TABLE I
RECOVERABLE POL AFTER DIFFERENT PERIODS OF STALING

No. of days	0	1	2	4	8
B41227 ..	100.0	97.8	94.0	87.8	64.4
B4362 ..	100.0	98.8	96.0	86.8	71.7
Mean ..	100.0	98.3	95.0	87.3	68.0

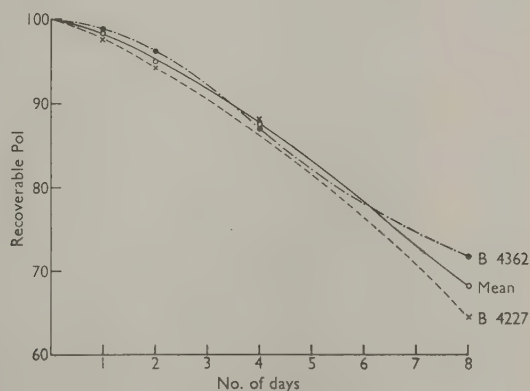


FIGURE 2

The evidence suggests that there is about 2% loss of Pol after 1 day's staling, and that this increases to 5% after 2 days, 12% after 4 days and 30% after 8 days. Reducing sugars increased rapidly the longer cane is allowed to stand between harvesting and grinding.

TABLE II
AVERAGE RAINFALL—INCHES

	1956												1957												1958												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Group A:																																					
Caymanas	0.36	0.77	1.89	2.20	1.40	1.80	4.81	2.43	1.36	13.36	3.36	0.58	0.65	0.35	2.89	3.68	5.34	0.03	0.45	1.14	4.64	6.63	5.55	0.30	2.18	1.36	1.12	0.04	17.05	4.00	1.56	3.14	3.98	15.24	3.31	0.32	
Bernard Lodge	0.15	1.40	1.64	2.47	0.93	2.25	3.33	0.68	0.37	12.32	1.92	0.96	0.92	0.69	1.68	1.60	7.48	0.32	0.57	1.72	4.80	5.65	5.50	0.33	2.72	2.32	1.16	0.02	16.29	4.75	2.89	0.85	2.84	16.42	4.44	1.05	
Innswood	0.97	2.34	1.51	2.00	0.56	1.15	4.47	0.56	4.21	14.12	3.77	1.74	0.81	1.32	4.42	0.37	4.80	0.51	1.70	0.83	4.88	6.45	9.22	0.65	4.89	0.80	0.84	0.30	15.96	6.74	1.70	1.00	4.00	18.59	3.37	2.79	
New Yorkmouth	0.35	2.92	0.52	0.61	0.86	2.32	3.39	0.48	1.80	9.81	1.47	0.59	0.11	0.88	1.71	0.77	7.05	0.78	0.82	0.28	4.16	6.14	0.60	0.21	4.40	1.12	0.11	0.15	12.35	13.50	1.01	0.93	1.19	58	1.78	2.04	
Sevens	nil	2.89	2.65	1.32	1.13	1.60	1.31	1.13	2.45	10.53	2.68	1.72	0.65	0.20	1.67	0.68	4.09	2.28	0.20	0.87	3.54	8.57	8.21	0.35	5.46	0.63	1.26	0.36	11.63	13.16	0.32	2.98	2.66	22.44	6.83	1.67	
MEANS	0.37	1.98	2.17	1.58	1.50	1.86	4.25	0.91	2.12	11.57	2.48	1.22	0.60	1.28	2.00	1.37	5.96	1.55	0.86	0.88	4.44	6.71	9.23	0.35	4.35	1.30	0.90	0.13	14.37	8.17	1.64	1.57	3.34	18.59	5.04	1.73	
Group B:																																					
Appleton	0.65	1.18	0.67	1.33	18.95	10.51	9.99	12.50	11.91	17.64	8.44	5.60	1.91	6.59	4.78	13.37	3.94	3.10	5.01	13.27	12.76	9.24	1.00	6.15	0.83	0.31	0.22	34.13	9.33	16.11	14.56	15.28	9.52	8.73			
Holland	1.24	1.92	7.31	6.46	12.90	9.99	13.71	8.87	7.74	14.48	6.41	4.35	0.88	1.41	7.38	4.54	6.08	1.93	6.13	10.25	12.61	6.73	7.16	7.46	2.92	4.25	0.40	0.86	2.31	9.14	13.14	7.86	13.03	10.14	13.52	2.93	3.68
Frome	1.09	1.83	6.08	8.01	18.22	10.39	9.45	15.58	8.45	15.13	9.54	3.68	1.19	8.37	3.46	8.20	8.89	7.66	10.67	6.78	7.16	7.46	2.92	4.25	4.25	0.40	0.86	2.31	9.14	13.14	7.86	13.03	10.14	13.52	2.93	3.68	
MEANS	0.97	1.43	7.63	5.87	16.69	10.30	9.49	13.35	9.37	15.75	8.13	4.44	1.99	7.65	4.39	8.70	6.99	4.39	7.97	10.98	10.84	7.00	5.53	5.51	4.25	0.45	1.01	3.18	11.53	11.54	5.59	14.85	11.96	15.18	3.86	3.19	
Group C:																																					
Barnett	1.28	0.30	6.56	0.58	6.87	4.48	6.74	4.08	6.03	5.74	5.66	1.41	1.16	6.11	1.83	5.77	14.73	4.25	1.31	2.43	7.34	4.52	8.85	3.55	9.01	0.28	0.46	0.65	8.91	9.82	2.64	4.07	6.93	11.29	3.04	7.33	
Rose Hall	0.98	2.11	1.80	1.03	2.60	2.79	2.73	1.57	2.76	8.23	8.06	1.17	1.33	2.51	1.09	0.86	5.43	2.12	0.82	2.88	4.63	6.15	0.48	3.88	12.17	1.80	0.36	0.27	3.86	11.10	0.14	2.07	2.92	10.22	1.46	6.18	
Hamptden	1.63	0.66	8.40	3.20	7.40	3.43	4.52	4.19	3.18	7.35	6.40	2.94	2.84	0.73	0.89	0.97	4.45	2.26	2.79	3.22	3.85	5.66	1.91	2.56	2.56	0.32	0.55	0.11	10.36	7.52	0.36	3.01	2.13	14.10	3.00	6.30	
Long Pond	1.44	1.44	5.26	0.83	3.47	3.27	3.63	1.38	4.94	4.78	4.23	1.69	3.64	2.71	1.03	3.85	5.61	1.91	3.56	3.52	3.85	5.96	1.91	2.56	2.56	0.32	0.55	0.11	10.36	7.52	0.36	3.01	2.13	14.10	3.00	6.30	
Vale Royal	1.84	2.51	5.73	0.65	4.56	3.63	3.38	2.66	2.29	5.50	6.19	2.14	3.91	2.27	0.88	1.15	7.42	2.64	2.80	3.11	6.13	4.33	1.67	4.23	6.47	1.60	0.65	0.13	8.00	6.93	2.88	1.63	2.05	9.92	3.20	6.75	
MEANS	1.43	1.40	4.84	1.27	6.00	3.51	4.27	2.92	4.24	6.32	6.11	1.87	2.57	4.97	1.07	2.63	8.55	3.10	2.10	2.98	5.20	4.72	1.26	3.88	7.11	0.95	0.95	0.37	7.47	8.36	1.58	3.49	3.18	11.27	2.64	5.56	
Group D:																																					
Rich. Lland.	2.88	4.83	6.93	0.54	6.45	1.77	1.57	1.45	0.46	6.39	10.30	5.65	4.99	4.05	0.28	2.01	2.84	2.76	0.70	1.64	2.80	2.94	3.20	7.54	9.02	2.38	3.30	2.23	10.93	7.23	2.27	0.82	3.98	11.61	7.67	7.95	
MEANS	5.69	4.06	2.83	3.69	6.18	4.06	2.06	2.97	3.71	6.87	9.39	7.46	6.69	4.06	2.88	3.69	6.18	4.06	2.06	2.97	3.71	6.87	9.39	7.46	5.69	4.06	2.88	3.69	6.18	4.06	2.06	2.97	3.71	6.87	9.39	7.46	
Group E:																																					
Gray's Inn C.	2.36	11.32	13.03	2.24	5.12	0.84	2.19	1.77	1.65	6.65	15.40	16.52	6.34	6.69	0.29	0.88	1.69	2.78	0.12	1.44	3.73	3.52	4.51	7.35	8.25	5.15	7.79	0.74	21.70	11.75	4.59	0.09	2.47	17.55	5.68	5.03	
MEANS (1949-58)	5.88	6.67	3.47	2.65	7.08	4.48	3.62	2.42	4.61	7.78	8.50	9.59	5.08	6.67	3.47	4.65	7.08	4.48	3.62	2.42	4.61	7.78	8.50	9.59	5.08	6.67	3.47	4.65	7.08	4.48	3.62	2.42	4.61	7.78	8.50	9.59	
Group F:																																					
Jan. Sug. Ests.	0.53	10.71	5.80	7.43	5.22	5.53	5.84	8.01	3.95	16.94	6.00	4.91	3.62	2.59	0.67	2.20	16.18	2.88	2.31	5.84	9.39	11.66	6.71	13.84	8.02	0.02	0.77	0.80	33.76	15.81	5.41	2.82	8.33	12.09	12.90	6.55	
Serge Island	0.23	9.07	3.28	2.52	3.54	7.97	7.40	3.59	4.95	16.47	6.85	0.65	1.77	5.12	0.05	3.98	16.37	7.43	5.04	4.69	14.11	13.30	9.70	3.25	8.43	1.67	1.25	0.44	35.10	16.39	7.13	3.91	6.98	18.00	9.30	3.15	
MEANS	0.38	10.14	4.56	6.32	4.53	6.73	6.62	5.80	4.45	16.17	6.43	2.78	2.69	3.95	1.36	2.88	16.78	8.01	3.63	5.27	11.71	11.98	4.84	12.41	8.23	1.17	1.01	0.63	39.43	15.90	6.97	3.97	7.46	15.03	11.05	4.45	
Group G:																																					
United Estates	0.74	1.04	3.42	4.35	7.94	8.67	8.21	6.83	5.96	19.95	3.14	1.66	2.97	1.64	3.41	4.87	7.42	2.76	6.93	5.00	9.98	5.96	3.10	9.02	3.93	1.11	0.73	0.94	12.65	7.84	6.33	6.83	5.97	20.58	4.07	3.91	
Worthy Park	0.97	0.91	4.03	4.61	7.91	7.59	7.69	2.95	2.54	12.68	4.97	1.87	2.13	0.00	4.10	4.48	6.43	2.96	9.03	3.00	8.91	5.97	2.07	1.42	7.86	1.97	4.50	1.14	9.98	11.26	6.31	6.56	6.01	13.79	2.70	6.32	
MEANS	0.86	0.97	3.72	4.77	8.02	8.13	7.95	4.89	5.90	12.47	4.06	1.82	2.60	3.23	2.26	4.62	6.91	2.86	6.93	4.00	9.71	7.27	3.24	1.72	4.86	1.84	2.69	0.90	11.30	9.56	6.37	6.59	5.99	23.18	3.39	4.62	
Group H:																																					
70-YEAR MEANS	2.47	2.04	2.62	3.96	8.11	7.26	5.03	6.59	7.18	9.70	6.22	2.88	2.47	2.04	2.62	3.96	8.11	7.26	5.03	6.59	7.18	9.70	6.22	2.88	2.47	2.04	2.62	3.96	8.11	7.26	5.03	6.59	7.18	9.70	6.22	3.88	

TABLE III

NO. OF DAYS IN EACH MONTH ON WHICH AVERAGE PRECIPITATION EXCEEDED 0.5 INCHES

	1956												1957												1958												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Group A:																																					
Caymanas ..	-	1	1	2	-	1	2	-	-	6	1	-	-	-	1	3	2	-	-	-	2	3	1	-	1	1	1	-	8	3	1	2	2	9	2	-	
Bernard Lodge	-	1	1	2	1	2	2	-	-	5	1	-	1	-	1	2	1	-	1	2	2	3	1	-	3	2	1	-	5	5	1	-	3	7	3	1	
Innswood ..	-	2	1	2	4	-	3	-	3	7	2	1	-	1	2	1	2	-	2	-	3	4	-	-	3	-	1	-	7	6	1	-	3	8	2	2	
Monymusk ..	-	2	2	1	-	1	2	-	1	3	1	-	-	-	-	-	4	3	1	-	2	3	-	-	2	1	-	-	5	7	-	-	2	3	-	2	
New Yarmouth	-	1	1	-	1	2	2	-	1	3	1	-	-	1	-	-	5	2	-	-	2	4	-	-	4	1	1	-	7	8	-	-	1	4	1	1	
Sevens ..	-	-	-	-	Not recorded	-	-	-	-	-	-	-	-	-	1	-	3	2	-	-	2	4	-	-	4	-	1	-	8	9	-	1	1	6	2	1	
Group B:																																					
Appleton ..	-	1	7	2	14	7	3	10	9	13	5	3	1	6	3	11	3	2	4	8	7	8	-	5	2	-	1	2	10	7	1	8	11	9	1	3	
Holland ..	-	1	6	3	7	7	3	9	6	12	3	4	1	6	1	3	4	1	4	6	9	2	1	3	2	-	-	1	7	7	5	13	7	6	5	-	
Frome ..	-	-	3	4	13	8	5	14	8	6	7	2	3	4	2	6	5	4	8	4	3	6	2	4	3	-	-	1	5	7	5	9	6	6	2	3	
Group C:																																					
Barnett ..	1	-	4	-	4	3	4	2	2	1	4	-	-	2	2	3	9	3	2	2	6	2	-	3	4	-	-	-	6	5	1	3	5	1	4	4	
Rose Hall ..	-	3	1	1	2	1	1	2	2	4	6	-	-	2	1	-	3	2	1	1	3	4	-	2	9	1	-	-	1	6	-	2	1	6	-	4	
Hamnden ..	-	-	5	2	5	1	2	3	4	3	5	2	2	1	-	2	6	4	3	3	1	4	1	2	4	1	1	1	5	5	-	1	1	10	2	3	
Long Pond ..	-	1	3	-	2	3	1	-	3	3	1	1	3	1	1	1	3	3	1	1	4	1	1	2	4	1	1	-	3	3	1	1	-	7	1	3	
Vale Royal ..	-	3	4	-	2	3	4	1	2	3	2	1	3	2	1	-	6	1	1	3	3	2	-	3	4	-	1	-	2	4	1	-	-	6	2	5	
Group D:																																					
Richmond/ Llandovery...	1	2	5	-	4	-	-	-	-	3	6	3	3	3	-	2	2	1	-	-	1	2	1	5	5	3	2	-	8	4	-	-	3	8	5	4	
Group E:																																					
Gray's Inn C...	2	5	7	1	3	-	1	1	1	3	7	5	3	4	-	-	1	2	-	-	1	1	3	6	5	1	2	1	9	8	3	-	1	9	2	2	
Group F:																																					
Jan. Sug. Ests.	-	5	3	4	3	4	5	3	1	7	4	3	1	2	-	1	6	5	1	4	4	7	5	1	2	1	-	8	9	2	-	5	7	5	4	4	
Serge Island ..	-	4	3	2	3	4	5	1	5	9	6	-	-	1	1	-	7	4	4	3	5	5	1	-	6	1	1	-	10	14	7	3	5	5	6	-	
Group G:																																					
United Estates	-	-	-	3	5	4	7	6	4	6	2	-	2	1	1	2	4	1	6	1	3	2	1	-	3	-	2	-	10	5	1	2	-	9	2	3	
Worthy Park	-	-	3	3	7	6	5	2	2	6	3	-	1	1	2	2	4	2	2	2	5	7	1	-	3	1	3	-	8	6	3	4	6	6	2	4	

TABLE IV
MINIMUM RAINFALL EXPECTED WITH CERTAIN PROBABILITIES AT FROME

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fontabelle ..	1:2	2.9	2.8	4.6	7.4	13.3	10.5	9.3	9.9	9.3	11.1	5.1	3.9
	1:1	2.0	2.2	3.6	6.0	11.3	8.8	8.1	9.2	9.1	8.9	3.9	2.6
	2:1	1.2	1.5	2.8	4.6	9.0	7.3	6.7	8.2	7.7	7.2	2.8	1.6
Belle Isle ..	1:2	2.6	3.1	5.2	9.3	15.6	10.6	10.5	11.4	11.3	11.8	5.4	4.1
	1:1	2.1	2.5	4.2	7.8	13.8	8.8	9.2	9.8	9.7	9.8	4.1	2.9
	2:1	1.4	2.0	3.0	5.9	11.5	7.2	7.8	8.8	8.4	8.7	3.1	2.0

C. CLIMATE

The average monthly rainfall figures over the last 3 years, for estates in their appropriate groups are given in Table-II and illustrated in Figure 3. Table III shows the number of days in each month on which the average precipitation exceeded 0.5 in.

The pattern of rainfall distribution was one of extremes. In the months of February, March and April, estates, with the exception of Gray's Inn, suffered a period of drought—in most cases, of great severity. During the following 2 months rainfall was heavy in all areas except the North Coast, and particularly in the south-central and eastern areas of the island, where rains disrupted estate operations and caused considerable flood damage. Serge Island received over 30 in. of rain in the space of six consecutive days in May.

In the months of July, August and September the dry North and South coast estates were again affected by drought. Flood rains followed in many areas during October.

The inequable distribution of rainfall during the first half of the year was undoubtedly the cause of the unusually poor juice quality of canes reaped by many estates towards the latter part of crop. The ripening stimulus offered by the early drought probably enhanced the promotion of suckering during the heavy rains in May and June. Several factories ceased grinding earlier than normal as it had become uneconomic to produce sugar from cane of such poor quality.

It is difficult to estimate the effect of the unusual seasons on the 1959 crop. The drought experienced in the three mid-cropping months delayed replanting

operations and must seriously have affected the growth of young ratoons. Later, in May and June, appreciable damage was done by the use of heavy transport in wet fields. At the same time, however, the prolonged rains then may have provided an important stimulus to young cane at the beginning of the "boom" growth period.

Rainfall probability

Rainfall data for as far back as possible, of all rain gauges located on sugar estates, have been abstracted from the records of the Meteorological Department. The probabilities of obtaining a certain minimum rainfall for each month are being calculated, and were completed for two stations at Frome and three at Monymusk. Tables IV and V briefly summarize certain of the salient features. Three sets of data are presented for each gauge for each month, the first represents the minimum rainfall to be expected with a chance of 1 for and 2 against, the second a similar figure with a 1 to 1 chance, and the third with a 2 to 1 chance.

There is a distinct possibility of water shortage occurring in the period November to March. The deficit accumulates in consecutive months, so that available soil moisture from January to March is probably exhausted, and canes planted in January and February would most likely suffer acutely from drought, if irrigation is not available. It is also obvious that December to March is the optimum period for land preparation, and Frome have derived considerable benefits from changing over to spring planting only. Another striking feature of the above table is the similarity of distribution of rainfall between the months of June to October inclusive.

TABLE V
MINIMUM RAINFALL EXPECTED WITH CERTAIN PROBABILITIES AT MONYMUSK

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Exeter ..	1:2	2.1	1.8	1.8	3.0	8.2	6.2	3.0	6.5	8.1	9.0	4.0	2.6
	1:1	1.5	1.3	1.3	2.0	5.8	4.0	1.9	4.6	5.8	6.8	2.8	1.8
	2:1	1.0	0.8	0.8	1.3	3.7	2.4	1.0	3.0	3.8	5.2	1.8	1.2
Monymusk ..	1:2	2.0	1.8	1.6	2.3	5.5	8.0	3.7	4.5	7.4	10.3	3.6	2.1
	1:1	1.4	1.2	1.1	1.4	3.1	5.0	2.6	3.1	4.9	8.2	2.5	1.3
	2:1	0.8	0.8	0.7	0.9	1.7	3.0	1.5	1.9	3.0	6.2	1.7	0.7
Hillside ..	1:2	2.5	2.5	2.0	2.9	7.8	8.3	4.7	5.5	8.2	11.4	4.3	3.0
	1:1	1.7	1.7	1.4	2.0	5.6	5.3	3.2	3.5	6.3	8.7	3.2	1.6
	2:1	1.0	1.0	0.8	1.2	3.6	3.3	1.9	2.1	4.7	6.2	2.4	0.8

A major contributing factor to the state of cane maturity is the moisture status of the soil. If we assume that a probability of 2 to 1 of receiving less than a certain precipitation is a reasonable basis, the best cropping period would appear to be November to April. November is, however, preceded by a wet October, and it would be inadvisable to commence crop until December to allow of adequate drying out. Similarly, the chances of a wet April are small, and cropping could continue in May without serious deterioration of juice quality. The evidence therefore points to a maximum cropping period for Monymusk of 1st December to 31st May.

D. IRRIGATION

The fourteen dispersed replicates of an irrigation experiment at Innswood were reaped as standover cane. The results were disappointingly inconclusive following the strong indication of a response to irrigation at a soil moisture deficit of 1.5 in. compared with less frequent cycles, which had been obtained by sampling the plots at the age of 12 months. This work has since been continued in a single formal irrigation experiment.

A programme of investigation into the water requirements of young plant and ratoon cane at Frome has been planned, and will be put into operation in the coming year.

E. CULTURAL AND MISCELLANEOUS STUDIES

Root Studies

Studies of the rooting of cane in relation to soil characteristics were carried out on several estates. A general impression has been that, of the many soil factors that could be expected to influence rooting, free drainage is of the first importance. Thus a considerable penetration of roots has been observed to a depth of over 3 ft. in virtually unweathered limestone, in spite of the mechanical impedance to development as evinced by the distorted nature of individual roots, and the low nutrient status of such a soil. Prolific rooting is found in some of the highly leached but well structured white clay subsoils of the high rainfall areas such as Frome and Appleton. On the other hand the alluvial clays of the arid Clarendon plain, which have not been as heavily leached but which are rather impermeable, appear to sustain root systems of relatively little depth.

This survey has now been discontinued, but the methods of observation will be used to study the effects of different cultivation treatments in formal experiments. Comparisons will be made in particular of root systems in Louisiana banks and cambered beds.

Cultivation experiments

Soil moisture contents in the latter part of crop following heavy rains were such that deep tillage in land preparation was of doubtful value. For this reason the laying out of a number of experiments was postponed until early next year. The experiments will

embrace a number of the more difficult heavy clay soils found on estates, and investigations will include a study of the effects of adding gypsum and lime during cultivation operations, as well as of different methods and intensities of tillage.

Six experiments had already been laid out at Appleton, Frome and Worthy Park to assess the merits of deep cultivation. Four of these trials were reaped as 2nd ratoons and two as 1st ratoons during 1958. The evidence suggests that some form of deep tillage is necessary under those conditions to obtain maximum yields, and it would appear that either one knifing or one ripping would be adequate.

Trash burning and nitrogen

Little or no information exists as to whether incorporation of trash, or burning of trash prior to replanting gives the greater production of sugar per acre. Work was initiated at three estates to investigate this question, and the plant crop results indicate little difference in effect between the two systems—in fact slightly higher yields were obtained from plots on which trash had been burnt. Certain of these trials included comparisons between two rates of nitrogen application and although benefits from additional nitrogen were noted on the “unburnt” plots, the increased production did not quite equal the production of “burnt” plots with lower nitrogen dressing.

Spacing

The third ratoon crop of the spacing experiment at Worthy Park confirmed the trends that were observed during the previous crop. This trial was designed to compare the sugar production obtained from different row widths—4 ft., 5 ft. and 6 ft.—and also various systems of planting. The standard method of planting is to plant two cane setts side by side about 4 in. apart at intervals of about 20 in. along the row. Comparisons were made against planting single setts 1 ft. apart along the rows, and single setts staggered at 1 ft. intervals.

The plant cane figures showed that rows spaced 4 ft. apart were the most productive and 6 ft. rows the least. The position altered gradually with ratooning, and 5 ft. rows gave the highest yields for 1st and 2nd ratoons. For these crops there was little difference between 4 ft. and 6 ft. row widths. The three treatments produced equal amounts of sugar in the 3rd ratoon crop. Planting single setts in a straight line at 1 ft. intervals proved to be at least as good as the other systems.

The merits of different land forms for irrigation

Surface irrigation is usually carried out in Jamaica by means of main canals at 1.5 chain intervals running parallel with cane rows, and which feed irrigation channels, “twigs,” placed at right angles to the main canals and spaced at a chain apart. Water is run into every furrow from the twigs. Under heavy clay soil conditions, it appeared questionable whether it was necessary to wet every furrow, and also whether water

could not be carried in lines much longer than 0.5 chain. Studies being conducted on these problems reveal that

- (a) A considerable quantity of water is saved by wetting alternate furrows, but that the yields on plots where every furrow was irrigated were superior.
- (b) Small decreases in production may be expected from the use of long lines (3 chains) for irrigation.
- (c) Planting two rows on a bank twice the size of the normal bank gave results similar to (a)

The effect of cleaning drains regularly

Work has started to determine the effects on yield of cleaning drains at varying intervals of time. The treatments being studied are—

- (a) Drains cleaned at the normal estate time.
- (b) Drains cleaned once per crop.
- (c) Drains cleaned once per cycle.

The plant crop was reaped in 1958, and the evidence so far, suggests that it is not necessary to clean drains more than once per crop in order to obtain the best results.

The effect of infield transport on yield

The usual system of transporting cane from the field under a cambered bed system is by loading the heaps from three beds on to one, and hauling these heaps by transport vehicles from these "draw beds." During wet weather the draw beds are severely damaged, and experiments were started to evaluate the extent of the damage, and whether cattle carts or tractor cars created greater havoc.

The plant crop was reaped in 1957, and it was expected that the damage would start having its effect on the 1st ratoons. The results show a relatively small decrease in yield of the drawbeds—the loss in yield amounting to only about 1.5%. Tractor cars appear to have done much more damage than cattle carts, and the drop in yield of drawbeds when tractor cars were used is about 8%. Cattle cart transport resulted in slightly higher drawbed yields.

The greater the load passing over an area, the lower was the relative production, and this was reflected in the gradation of yield from the middle of the bed to the interval. The relative performance of areas one chain from the interval is 9% worse than four chains from the interval. For tractor cars this decline is 3%, and 13% for cattle carts.

The value of trash turning and forking at Frome

It had been an established custom to turn trash shortly after harvest in order to enable the young sprouts to grow easily, to permit the placement of fertilizer near the cane stools, and to clear the rows for forking. The value of these practices was questionable, especially with certain vigorous varieties, and work was commenced to study their effects at Frome. In the four trials, which have reached the 3rd ratoon stage,

there have been very small benefits to trash turning or forking, and it appears that the gains are made only under relatively wet conditions, when temporary water logging of the roots may develop, and when heavy transport vehicles cause severe compaction.

The effect of bagasse on heavy clay soils

The merits of bagasse as a soil ameliorant under heavy clay soil conditions were studied in three experiments at Frome and one at Innswood. There were no increases in production at any site for the plant and first ratoon crops, but small increases are noted in the later crops.

Lime and gypsum

An indication has been obtained of a benefit from the application of gypsum to a heavy clay soil at Parnassus. The gypsum was incorporated at the rate of 6 tons per acre during land preparation. The plant cane yield results are given below:—

	Untreated plots	Treated plots	Sig. Diff. (at 5%)
Yield (tons per acre) ..	20.4	23.1	2.9
Root mean square deviation	4.9	2.7	2.1

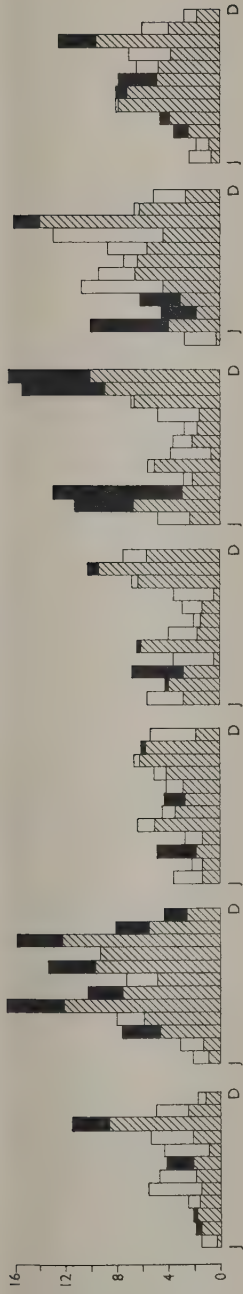
While the difference between the mean yields is not quite significant at 5% there is significantly less variability between the treated than between the untreated plots. The inference is that a "patchy" condition exists within the experimental area, that can be rectified by the use of gypsum. The calcium contents of the leaves of the young ratoons showed no marked response, the level being normal on all plots. Likewise, N, P, and K measurements were fairly consistent, the uptake being uniformly low.

If nutritional effects are excluded, the probable mechanism of a beneficial effect from gypsum is through an improvement in soil structure due to increased cohesion between clay particles. This might be brought about in several ways.

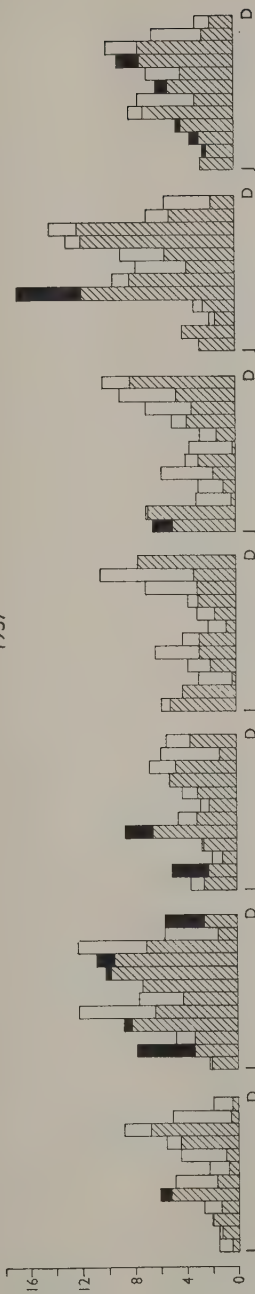
- (a) A reduction of the electrostatic potential of the clay particles due to the increased electrolytic composition of the soil solution.
- (b) The removal by exchange of dispersive cations (such as sodium) from the clay surfaces.
- (c) An increase, or a change in the nature of organic colloids.

Laboratory work has been commenced with a view to investigating the first two of these possible mechanisms. Studies of the effects of adding various amounts of electrolyte on the flocculation of dilute suspensions of clay have been carried out, flocculation being measured in terms of the decreased turbidity as the flocs settle out. Sigmoid curves are obtained in which two critical concentrations can be fairly readily distinguished. These concentrations are interpreted on a

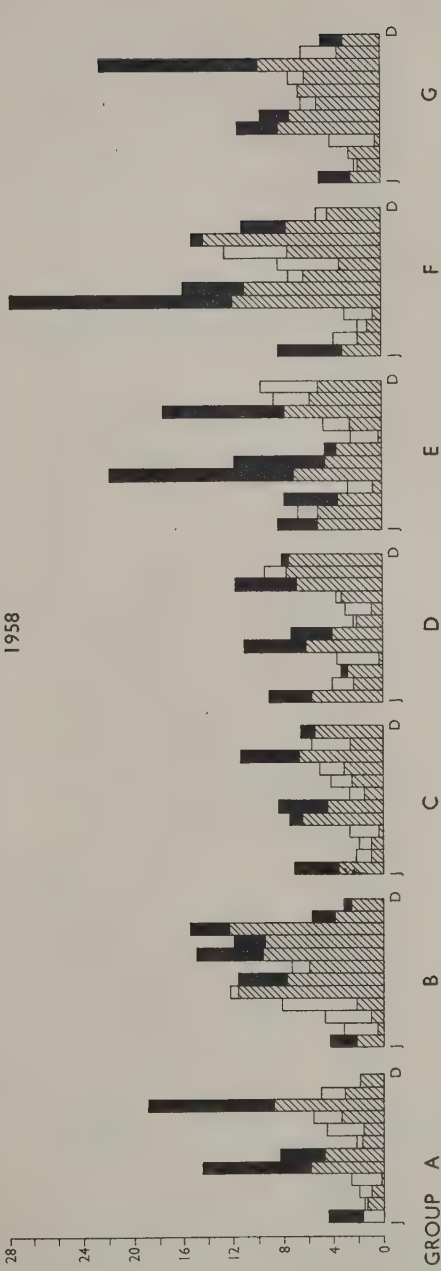
1956



1957



1958



■ MEAN MONTHLY RAINFALL ABOVE LONG AVERAGE
 ▨ MEAN MONTHLY RAINFALL BELOW LONG AVERAGE
 ■ OR ▨ MEAN MONTHLY RAINFALL
 ▨ OR ▨ LONG AVERAGE

FIGURE 3
 Mean Monthly Rainfall (Group A-G) (1956, 1957 and 1960) and Comparison with Long Averages

TABLE VI
NO. AND DISTRIBUTION OF CULTIVATION AND MISCELLANEOUS TRIALS IN OPERATION DURING 1958

	FALL PLANTS			SPRING PLANTS		RATOONS			Total
	Planted 1956	Planted 1957	Planted 1958	Planted 1957	Planted 1958				
	Reaped 1958	To be reaped 1959	To be reaped 1960	Reaped 1958	To be reaped 1959	Reaped 1958			
						1st	2nd	3rd	
Northern Division:									
Barnett	—	—	—	—	—	—	—	—	—
Hampden	—	—	—	—	—	—	—	—	—
Long Pond	1	—	—	—	—	—	—	1	2
Richmond/Llandovery	—	—	—	—	—	—	—	—	—
Rose Hall	—	—	—	—	—	—	—	—	—
Vale Royal	—	—	—	—	—	—	—	—	—
Central Division:									
Appleton	—	—	—	—	—	1	1	—	2
Frome	—	—	—	11	2	2	4	5	24
Holland	—	—	—	—	—	—	—	—	—
Monymusk	—	—	—	—	—	1	—	—	1
New Yarmouth	—	—	—	—	—	—	—	—	—
Sevens	—	—	—	—	—	1	—	—	1
Eastern Division:									
Bernard Lodge	—	—	—	—	—	—	—	—	—
Caymanas	—	—	—	—	—	—	—	—	—
Gray's Inn Central	—	—	—	—	—	—	—	—	—
Innswood	—	—	—	—	—	—	1	1	2
Jamaica Sugar Estates	—	—	—	—	—	—	—	—	—
Serge Island	—	—	—	—	—	—	—	—	—
United Estates	—	—	—	—	—	—	1	—	1
Worthy Park	—	—	—	1	—	—	1	1	3
Totals	1	—	—	12	2	5	8	8	36

kinetic basis as that at which collisions between particles may just possibly result in coagulation and that at which all collisions result in coagulation. It should be possible to develop this study by using mixed ion systems in which the exchange reactions between ions can be controlled, and the effect of specific ions on the exchange complex can be studied at various concentrations of free electrolyte. It might then be possible in some instance to interpret the effects of gypsum in the field in terms of the chemical composition of soil solutions. However, there are already strong indications with the particular soil in question that, in the absence of disturbing mechanical forces, the ionisation of the soil solution would normally be sufficiently light to maintain flocculation. Attention will therefore be concentrated, for the present, on the effect of calcium and other salts on the mechanical properties of soil crumbs, in particular, their resistance to plastic flow and to slaking.

The indication from the above experiment that calcium application may help to ameliorate certain intractable clays was strengthened by confirmatory evidence derived from trials with lime carried out at Appleton, Parnassus and Vale Royal. The lime in the form of ground limestone was incorporated in the soil by knifing.

The increase % relative to control are given below:—

	Plant	1st ratoon	2nd ratoon
Appleton	22	-5	6
Parnassus	4	9	
Vale Royal	9		

Two experiments at Frome, however, did not show any benefits from dressings of lime.

The number of field experiments operated pertaining to cultural and miscellaneous studies is given in Table VI.

F. NUTRITION

The type and quantity of fertilizer used by estates for different cycles of cane are summarized in Table VII.

The increased amount of nitrogen applied is due to the increase in area reaped, as the application per acre remains constant at the equivalent of approximately 3.75 cwt. sulphate of ammonia per acre. Plants and ratoons receive roughly the same amount, except the older ratoons which are given slightly smaller dressings. Phosphate utilization was more widespread and appreciably higher levels of application were used.

TABLE VII
FERTILIZERS USED FOR EACH CANE CLASS

	NITROGEN				PHOSPHATE				POTASH			
	Acres fertilized	Tons N used	Mean lb. per acre	Acres fertilized % total acres reaped	Acres fertilized	Tons P ₂ O ₅ used	Mean lb. per acre	Acres fertilized % total acres reaped	Acres fertilized	Tons K ₂ O used	Mean lb. per acre	Acres fertilized % total acres reaped
Fall plants	2,352	84	80	98	233	6	57	10	1,178	50	95	50
Spring plants	10,101	347	85	97	1,542	35	50	15	5,947	257	97	57
1st ratoons	7,647	279	81	99	736	11	34	9	4,226	177	94	55
2nd ratoons	9,374	346	83	99	887	12	30	9	5,696	239	94	60
3rd ratoons	10,623	400	84	99	800	11	31	7	5,422	214	88	50
Old canes	21,996	765	78	99	1,640	31	42	7	12,766	553	97	57
Totals	62,098	2,221	80	98	5,838	106	41	9	35,235	1,490	95	56

The percentage area receiving potash was similar to that last year, and estates' consumption rose to nearly 1,500 tons K₂O, all areas applying rates similar to previous years, except the North Coast Estates where greater amounts per unit area were used.

Nutrition investigations in the field

Fertilizer requirements have been determined with a fair degree of accuracy for most areas, and it appears

necessary only to lay out check plots to confirm suspicions, or pin point trouble spots. The dispersed blocks have given useful information in this connection, and attempts will be made during the coming crop to determine the best system for laying them out. Formal experiments are now being used largely to compare different forms of the same nutrient, methods and times of application. Table VIII summarizes the number and distribution of all fertilizer trials operated during 1958.

TABLE VIII
NO. AND DISTRIBUTION OF FORMAL, DISPERSED BLOCK AND OTHER NUTRITION EXPERIMENTS IN OPERATION—1958

	FALL PLANTS			SPRING PLANTS					Total	No. of fields with		
	Planted 1956	Planted 1957	Planted 1958	Planted 1957	Planted 1958							
	Reaped 1958	To be reaped 1959	To be reaped 1960	Reaped 1958	To be reaped 1959	RATOONS						
						Reaped 1958						
					1st	2nd	3rd		Micro plots	Crop log plots	Late N plots	
Northern Division:												
Barnett	—	—	—	—	—	2	4	—	6	7	—	—
Hampden	—	—	—	—	—	—	—	—	—	—	—	—
Long Pond	—	—	—	—	—	—	1	—	1	8	—	—
Richmond/Llandovery ..	—	1	—	—	—	—	3*	—	4	10	—	—
Rose Hall	—	—	—	—	—	1	—	—	1	—	—	—
Vale Royal	1	—	—	—	—	—	—	—	1	8	—	—
Central Division:												
Appleton	—	—	—	—	1	3	—	—	4	11	—	—
Frome	—	—	—	7	68	—	2	1	78	4	—	—
Holland	—	—	—	1	—	—	—	—	1	3	—	—
Monymusk	—	—	—	3	—	1	—	—	4	19	—	—
New Yarmouth	—	—	—	—	—	—	—	—	—	5	—	—
Sevens	—	—	—	—	—	1	—	—	1	6	—	—
Eastern Division:												
Bernard Lodge	—	—	—	—	—	—	—	—	—	12	—	—
Caymanas	3	—	—	3	—	—	—	—	6	5	—	—
Gray's Inn Central	—	—	—	—	—	—	—	—	—	—	—	—
Innswood	—	—	—	2	—	—	—	—	2	6	—	—
Jamaica Sugar Estates ..	—	—	—	1	—	1	—	—	2	—	—	—
Serge Island	—	—	—	—	—	—	1	—	1	8	—	—
United Estates	3	—	—	—	—	—	3*	—	6	—	—	—
Worthy Park	—	—	—	—	—	—	—	—	—	—	—	—
Total	7	1	—	17	69	9	14	1	118	112	—	—

In the above table, the dispersed block experiments marked * (consisting of three blocks each) have been counted as one experiment.

(a) *Trace element investigations*

Trials were laid down in 1957 to determine the effects of a trace element mixture at Caymanas, Frome and Vale Royal. The mixture included magnesium, manganese, copper, boron, zinc and molybdenum. The plant crop results showed that no responses were obtained to these elements at Caymanas and Frome, but appreciable benefits were obtained at Vale Royal.

(b) *Sulphate of ammonia vs. urea*

The main argument in favour of urea as a source of nitrogen in agriculture centres around its high nitrogen concentration. As compared with sulphate of ammonia, transport, storage and application charges would be smaller for urea, but its keeping qualities are suspect and its cost per unit nitrogen slightly higher than that of sulphate of ammonia. Urea would be the best form of nitrogen to use in aerial application as the pay load would be greatest for similar quantities.

Experiments were initiated in 1956 to assess the relative merits of the two materials, and up to the end of the 1958 crop, a total of eight plant experiments and

4 ratoon experiments had been reaped. A summary of the cane and sugar yields of these trials is presented in Table IX.

TABLE IX

CANE AND SUGAR YIELDS RELATIVE TO NO NITROGEN = 100

	PLANTS		RATOONS	
	Cane	Sugar	Cane	Sugar
No nitrogen	100	100	100	100
Sulphate of ammonia ..	111	110	118	114
Urea = Sulphate of ammonia	109	108	114	112

The figures indicate that nitrogen applications had no deleterious effect on juice quality, but resulted in significant increases in yield of cane and sugar. The responses obtained to both fertilizers were similar, though the increases due to sulphate of ammonia tend to be slightly higher.

Biuret concentration in urea has been reported to be the cause of damage to some crops, and investigations

TABLE X

NO. OF FIELDS OR SECTIONS ON EACH ESTATE SHOWING % NITROGEN IN LEAF DRY MATTER

	0.00 to 1.20	1.21 to 1.30	1.31 to 1.40	1.41 to 1.50	1.51 to 1.60	1.61 to 1.70	1.71 to 1.80	1.81 to 1.90	1.91 to 2.00	2.01 and over	Total of fields sampled
APPLETON:											
Appleton	—	—	—	2	4	4	10	5	2	3	} 82
Raheen	—	—	2	9	9	10	10	7	2	3	
BARNETT	4	3	2	1	1	3	2	—	1	—	17
BERNARD LODGE:											
March Pen	2	3	7	19	19	11	6	2	—	—	} 124
Corlette	—	2	2	6	7	1	—	—	—	—	
Phoenix Park ..	1	4	10	7	8	5	2	—	—	—	
CAYMANAS:											
Lorne, Felty ..	—	—	—	—	1	4	6	9	7	3	} 91
Caymanas	—	—	—	1	10	8	11	14	14	3	
GRAY'S INN CENTRAL ..	—	—	6	4	6	6	7	3	5	1	38
HAMPDEN:											
Gales Valley, Weston Favel ..	1	11	17	25	16	7	6	4	2	—	} 149
Golden Grove, Hampden, Tilston ..	2	1	12	12	12	9	6	4	2	—	
HOLLAND	—	—	1	1	2	10	12	6	2	1	35
INNSWOOD	5	3	14	11	11	21	16	2	3	—	86
LONG POND	1	6	9	14	13	11	8	3	1	—	
MONYMUSK:											
EKETER	—	2	9	30	27	36	27	11	12	1	} 341
Springfield	—	4	23	30	23	30	36	22	14	4	
NEW YARMOUTH:											
Yarmouth	—	—	11	6	4	—	—	—	—	—	} 67
Rowington	—	1	6	16	13	6	2	—	1	—	
RICHMOND:											
Richmond	—	—	2	1	3	7	5	8	1	3	} 49
Llandovery	—	—	—	—	3	3	3	5	5	—	
ROSE HALL	2	14	14	12	20	9	2	4	7	4	88
SERGE ISLAND	—	—	2	1	10	2	4	2	—	—	21
SEVENS	1	3	11	20	18	15	11	4	3	—	86
UNITED ESTATES:											
Windsor Park	—	1	2	11	21	22	12	13	4	—	86
VALE ROYAL:											
Swanswick	2	10	12	4	11	7	7	—	4	4	61
WORTHY PARK	—	—	—	—	4	14	12	15	3	11	59
Total	21	68	174	243	276	261	223	143	95	41	1,545
% of all fields	1	5	11	16	18	17	14	9	6	3	100

were commenced to determine its effect on cane. Unfortunately, the three areas on which trials were located, showed no response to nitrogen, and no conclusion could be reached. The ratoon crops should provide more definite evidence.

(c) *Method of application of sulphate of ammonia*

The normal method of applying sulphate of ammonia is by hand, the material being placed near the cane stools on the surface of the soil. There may be a loss of ammonia incurred by this method, and it was considered desirable to test this by comparing the standard practice with sub-surface placement. At the same time a third treatment was included to evaluate the merits of broadcast application, as would be carried out aerially. These experiments reaped as spring plants at Monymusk give results suggestive of no difference in yields to be expected from the different treatments.

(d) *Leaf composition survey*

During 1958 over 1,500 fields on sugar estates were leaf sampled when the cane was 5 to 6 months of age,

and determinations of nitrogen, phosphate and potash carried out on the samples. These do not include samples taken at Frome and Jamaica Sugar Estates, who carried out their own analyses. This constituted the beginning of a leaf composition survey which is scheduled to comprise leaf sampling of all fields on all estates by the end of 1960, and the analyses of nitrogen, phosphate and potash.

Tables X, XI and XII are presented below to show:—

- (i) the number and distribution of samples taken;
- (ii) the distribution according to their N, P and K status.

Table XIII shows the distribution of fields according to their nitrogen status on each estate.

(2) *The value of filterpress mud on phosphate deficient areas*

Interesting results were obtained from an experiment which was laid out at Worthy Park on an area being newly planted to cane and phosphate deficient. The response to phosphate was tested, and also how this

TABLE XI
NO. OF FIELDS OR SECTIONS ON EACH ESTATE SHOWING % P_2O_5 IN LEAF DRY MATTER

	0.00 to 0.34	0.35 to 0.36	0.37 to 0.38	0.39 to 0.40	0.41 to 0.42	0.43 to 0.44	0.45 to 0.46	0.47 to 0.48	0.49 to 0.50	0.51 and over	Total
APPLETON:											
Appleton	2	3	4	5	3	7	3	1	2	—	30
Rahcen	4	1	18	8	5	3	4	4	2	3	52
BARNETT	1	—	1	3	2	2	1	1	—	6	17
BERNARD LODGE:											
March Pen	—	1	5	7	5	11	7	4	9	20	124
Corlette	—	—	—	1	3	5	4	3	1	1	
Phoenix	—	—	—	1	2	10	2	5	4	13	
CAYMANAS:											
Lorne, Ferry	—	—	1	4	2	1	2	2	4	14	91
Caymanas	—	2	5	6	10	9	5	3	6	15	
GRAY'S INN CENTRAL	5	4	5	4	4	3	4	5	4	—	38
HAMPDEN:											
Gales Valley, Weston Favel	46	6	13	9	5	8	1	1	—	—	89
Golden Grove, Hampden, Tilston	14	6	12	7	6	8	2	2	1	2	60
HOLLAND	6	5	7	5	1	6	1	2	1	1	35
INNSWOOD	17	6	5	8	7	6	6	9	5	17	86
LONG POND	1	—	2	5	7	6	10	7	3	25	
MONYMUSK:											
Exeter	—	2	2	3	3	7	5	7	10	116	155
Springfield	8	4	5	11	8	10	12	23	12	93	186
NEW YARMOUTH:											
Yarmouth	3	—	6	3	1	1	3	2	—	2	21
Rowington	10	—	9	7	2	4	4	3	4	4	45
RICHMOND:											
Richmond	1	1	5	4	5	3	1	5	1	4	30
Llandovery	—	—	2	4	1	3	—	2	3	4	19
ROSE HALL	30	7	11	6	9	4	3	4	9	5	88
SERGE ISLAND	2	2	6	4	1	1	3	1	—	1	21
SEVENS	11	8	4	4	9	9	5	12	9	15	86
UNITED STATES:											
Windsor Park Area	15	6	11	22	10	6	2	3	4	7	86
VALE ROYAL:											
Swanswick	24	7	11	7	2	2	2	2	2	2	26
WORTHY PARK	5	3	5	6	7	1	3	1	2	26	59
Total	205	73	155	154	120	137	95	114	98	394	1,545
% of all fields	13	5	10	10	8	9	6	7	6	26	100

TABLE XII
NO. OF FIELDS OR SECTIONS ON EACH ESTATE SHOWING % K₂O LEAF DRY MATTER

	0.00 to 0.90	0.91 to 1.00	1.01 to 1.10	1.11 to 1.20	1.21 to 1.30	1.31 to 1.40	1.41 to 1.50	1.51 to 1.60	1.61 to 1.70	1.71 and over	Total
APPLETON:											
Appleton	—	—	—	—	5	6	12	4	3	—	30
Raheen	—	—	—	—	5	13	16	11	6	1	52
BARNETT	1	—	1	3	4	1	4	3	—	—	17
BERNARD LODGE:											
March Pen	—	—	2	3	3	11	11	10	11	18	124
Corlette	—	—	—	1	2	6	2	1	1	5	
Phoenix Park	—	—	—	—	1	3	8	2	6	17	
CAYMANAS:											
Lorne, Ferry	—	—	—	1	1	2	2	7	6	8	91
Caymanas	—	—	1	1	2	4	9	9	11	27	
GRAY'S INN CENTRAL	—	—	1	1	2	4	10	10	8	2	38
HAMPDEN:											
Gales Valley, Weston Favel	—	1	—	1	9	17	30	12	14	5	89
Hampden	—	1	—	4	5	8	7	7	8	20	
HOLLAND	—	—	—	—	—	—	5	5	18	7	35
INNSWOOD	3	2	11	7	8	10	14	11	7	13	86
LONG POND	—	—	—	2	2	3	6	4	10	39	66
MONYMUSK:											
Exeter	23	16	27	18	21	20	12	6	7	5	155
Springfield	15	27	30	28	33	22	17	8	3	3	186
NEW YARMOUTH:											
Yarmouth	—	—	—	—	—	2	4	3	3	9	21
Rowington	3	2	3	—	3	3	11	3	6	11	45
RICHMOND:											
Richmond	1	1	5	4	5	3	1	5	1	4	30
Llandovery	—	—	2	4	1	3	—	2	3	4	19
ROSE HALL	—	—	—	2	4	15	9	20	12	26	88
SERGE ISLAND	—	—	—	1	2	4	2	4	3	5	21
SEVENS	—	1	1	5	10	4	6	13	12	34	86
UNITED STATES:											
Windsor Park	3	2	13	19	13	11	6	4	8	7	86
VALE ROYAL:											
Swanswick	—	1	3	7	9	9	13	7	8	4	61
WORTHY PARK	—	—	—	—	1	1	4	11	17	25	59
Total	49	54	100	112	151	185	221	182	192	299	1,545
% of all fields	3	4	6	7	10	12	14	12	13	19	100

TABLE XIII
N DISTRIBUTION EXPRESSED AS % OF FIELDS SAMPLED

Estate	0.00 to 1.20	1.21 to 1.30	1.31 to 1.40	1.41 to 1.50	1.51 to 1.60	1.61 to 1.70	1.71 to 1.80	1.81 to 1.90	1.91 to 2.00	2.01 and over
Appleton	—	—	2.4	13.4	15.9	17.1	24.4	14.6	4.9	7.3
Barnett	23.5	17.6	11.8	5.9	5.9	17.6	11.8	—	5.9	—
Bernard Lodge	2.4	7.3	15.3	25.8	27.4	13.7	6.5	1.6	—	—
Caymanas	—	—	—	1.1	12.1	13.2	18.7	25.3	23.1	6.6
Gray's Inn Central	—	—	15.8	10.5	15.8	15.8	18.4	7.9	13.2	2.6
Hampden	2.0	8.1	19.5	24.8	18.8	10.7	8.1	5.4	2.7	—
Holland	—	—	2.9	2.9	5.7	28.6	34.3	17.1	5.7	2.9
Innswood	5.8	3.5	16.3	12.8	12.8	24.4	18.6	2.3	3.5	—
Long Pond	1.5	9.1	13.6	21.2	19.7	16.6	12.1	4.5	1.5	—
Monymusk	—	1.8	9.4	17.6	14.7	19.4	18.5	9.7	7.6	1.5
New Yarmouth	—	1.5	25.4	32.8	25.4	9.0	3.0	—	1.5	—
Richmond	—	—	4.1	2.0	12.2	20.4	16.3	26.5	12.2	6.1
Rosehall	2.3	15.9	15.9	13.6	22.7	10.2	2.3	4.5	8.0	4.5
Serge Island	—	—	9.5	4.8	47.6	9.5	19.0	9.5	—	—
Sevens	1.2	3.5	12.8	23.3	20.9	17.4	12.8	4.7	3.5	—
United Estates	—	1.2	2.3	12.8	24.4	25.6	14.0	15.1	4.7	—
Vale Royal	3.3	16.3	20.0	6.6	18.0	11.5	11.5	—	6.6	6.6
Worthy Park	—	—	—	—	6.8	23.7	20.3	25.4	5.1	18.6

TABLE XVII
ACREAGE UNDER VARIETY PER CENT. TOTAL ACREAGE REAPED FOR ECOLOGICAL GROUPS—1957 AND 1958

Ecological Groups	VARIETIES																			
	B3439		B34104		B37161		B37172		B41227		B42231		B4362		Co331		Co431		Others	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Wet West ..	1	—	14	5	8	4	3	2	38	45	2	2	28	37	—	—	—	—	6	5
Dry North ..	6	4	2	1	21	17	—	—	7	11	2	2	10	14	10	18	10	7	32	26
Irrigated ..	9	6	19	6	2	1	—	—	38	43	22	23	14	15	—	—	—	—	6	6
Wet East ..	7	5	—	—	2	1	45	39	6	7	—	1	29	35	—	—	—	—	11	12
Central ..	2	1	9	—	1	1	—	—	23	28	5	5	49	54	—	—	—	—	13	11
Average ..	6	4	8	4	6	4	7	6	29	34	11	11	21	25	2	2	1	1	9	9

TABLE XVIII
PLANT ACREAGE UNDER VARIETY PER CENT. TOTAL PLANT ACREAGE REAPED FOR ECOLOGICAL GROUPS—1957 AND 1958

Ecological Groups	VARIETIES															
	B3439		B37161		B37172		B41227		B42231		B4362		Co331		Others	
	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958
Wet West ..	—	—	—	—	1	—	41	39	2	1	48	55	—	—	8	5
Dry North ..	—	—	8	7	—	—	28	18	6	3	25	24	22	31	11	17
Irrigated ..	1	2	—	—	—	—	51	54	31	20	11	15	—	—	6	9
Wet East ..	3	1	—	—	23	22	24	16	3	3	37	45	—	—	10	13
Central ..	—	—	—	—	—	—	37	38	7	5	39	51	—	—	17	6
Average ..	1	1	1	1	3	3	42	38	16	10	27	33	2	4	8	10

North where it is the major variety. B42231 gained ground slightly on the Dry North and on the Wet East Estates; however, the bulk of this variety is grown on irrigated Estates. Between them, B41227 and B4362 shared the honours in all areas—the former dominating the Irrigated areas and the Island, and the latter being the most widely planted clone on the Wet West, Dry North, Wet East and Central Estates.

Performance

The productivity of the varieties for 1958 is shown in Table XIX terms of cwt. sugar per acre per month. The yields were much lower than those for 1957, but B4362, B41227 and B42231, remained the most productive varieties.

Other tables showing the performance of the varieties are grouped in Appendix II.

Variety experiments

The number and distribution of variety experiments in operation during 1958 are given in Table XX.

Final stage trials

(i) B47' and B51400 (1st 500 selected from seedling nurseries) series. The results of the final trials are summarized in Table XXI, which gives the order of merit based on sugar yields of the leading selections.

The three leading varieties as Second ratoons are B51410 (E162), B51414 (G483) and B51415 (H444). The first variety has proven to be a very strong ratooner, the second one has always been very vigorous, and the third variety has done well consistently. These three clones were among the best five in the lattice trials. B51410 is being grown on a field scale at Vale Royal, where it is doing well, and B51414 and B51415 have been extended at Frome. It is recommended that B51410 be tried on the Dry North, Wet West estates and on heavy irrigated soils; B51414 on heavy irrigated soils and B51415 on the Wet East estates where its good juice should prove advantageous.

B47258 and B51418 which were once highly thought of have not confirmed their early promise.

B47419 is being grown at Caymanas. It is a vigorous clone but produces poor juice.

TABLE XIX
CWT. THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR VARIETIES BY ECOLOGICAL GROUPS—1958

Ecological Groups		VARIETIES									Average	
		B3439	B34104	B37161	B37172	B41227	B42231	B4362	Co331	Co421		Others
Wet West		4.01	4.57	5.04	4.86	6.06	6.44	6.64	5.15	3.64	5.13	6.09
Dry North		4.45	3.89	4.15	5.49	5.20	4.84	4.76	4.67	4.59	4.10	4.52
Irrigated		5.75	4.86	4.82	—	5.95	5.99	6.40	2.91	4.46	5.61	5.53
Wet East		4.67	4.70	4.78	5.63	5.68	4.35	5.47	—	—	4.99	5.45
Central		5.38	6.79	4.63	—	7.52	7.07	8.02	—	—	7.52	7.72
Average		5.42	4.75	4.48	5.54	6.02	5.99	6.38	4.65	4.59	5.05	5.81

TABLE XX
No. AND DISTRIBUTION OF VARIETY EXPERIMENTS IN OPERATION DURING 1958

	FALL PLANTS			SPRING PLANTS					LONG SEASON TRIALS			Total
	Planted 1956	Planted 1957	Planted 1958	Planted 1957	Planted 1958				Reaped 1958	Reaped 1959	Reaped 1960	
	Reaped 1958	To be reaped 1959	To be reaped 1960	Reaped 1958	To be reaped 1959							
						1st	2nd	3rd				
Northern Division:												
Barnett	—	—	—	1	1	—	1	—	—	—	—	3
Hampden	2	—	1	—	1	1	—	—	—	—	—	5
Long Pond	1	—	—	2	—	—	2	—	—	—	—	5
Richmond/Llandovery ..	1	—	—	1	—	—	1	—	—	1	—	4
Rose Hall	—	—	1	2	—	—	—	1	—	1	—	5
Vale Royal	2	3	—	2	—	—	—	—	—	—	—	7
Central Division:												
Appleton	—	—	—	1	—	1	—	—	—	1	—	3
Frome	1	—	—	3	3	—	3	—	2	1	—	13
Holland	—	1	—	2	—	—	—	—	—	—	—	3
Monymusk	—	1	—	3	1	1	2	—	—	1	—	9
New Yarmouth	3	—	—	1	—	—	—	—	—	—	—	4
Sevens	1	—	—	2	1	—	1	—	—	1	—	6
Eastern Division:												
Barnard Lodge	—	—	—	2	1	—	2	—	—	—	—	5
Caymanas	—	1	—	2	1	—	—	—	1	1	—	6
Gray's Inn Central	—	—	—	1	—	2	—	—	—	—	—	3
Innswood	—	—	—	2	—	1	1	—	—	—	—	4
Jamaica Sugar Estates ..	2	—	—	—	1	—	—	—	1	—	—	4
Serge Island	—	—	—	2	1	—	—	—	—	—	—	3
United Estates	—	—	—	3	—	—	—	—	—	—	—	3
Worthy Park	—	—	—	1	1	—	—	—	—	—	—	2
Totals	13	6	2	33	12	6	13	1	4	7	—	97

TABLE XXI
SUMMARY OF SECOND RATOON RESULTS OF FINAL EXPERIMENTS
(order of merit based on sugar yields)

Variety	Parentage	WET WEST				WET EAST				IRRIGATED				ISLAND			
		A	C	D	E	A	C	D	E	A	C	D	E	A	C	D	E
B47258	B39254 x B34104	3	2	1	5	1	1	0	2	0	0	0	2	4	3	1	9
B5140(E162)	B35207 x POJ2878	4	4	2	5	1	1	0	2	1	1	1	2	6	6	2	9
B51413(F364)	B4362 x B34104	—	—	—	—	—	—	—	—	2	2	0	3	2	2	0	3
B51414(G483)	B45170 x B41227	3	4	1	5	1	1	1	2	2	2	0	3	6	7	2	10
B51415(H444)	B35206 x POJ2878	2	2	1	5	1	1	0	2	—	—	—	—	3	3	1	7
B51418(1216)	Co421 x B37193	2	1	1	5	0	0	0	2	1	1	0	4	3	2	1	11

A = Number of times placed in first 5. B = Number of times placed in first 10.
C = Number of times better than standard. D = Number of times significantly better than standard.
E = Number of experiments in which planted.

TABLE XXII
SUMMARY OF PLANT RESULTS OF FINAL EXPERIMENTS
(order of merit based on sugar yields)

Variety	Parentage	WET WEST				WET EAST				IRRIGATED				NORTH COAST				ISLAND			
		A	C	D	E	A	C	D	E	A	C	D	E	A	C	D	E	A	C	D	E
B49119	B35218 x B4098	4	3	0	5	2	2	2	3	4	3	1	6	5	5	4	5	15	13	7	19
B52406(2/235)	Co421 x B41227	2	4	1	5	0	0	0	3	3	4	2	5	2	3	2	6	7	11	5	19
H37/1933	H32/8560 x H34/1874	2	3	1	3	3	2	0	3	0	1	1	2	2	4	3	4	7	10	5	12
NC0510	Co421 x Co812	2	3	1	3	1	2	0	3	4	4	3	5	2	3	2	5	9	12	6	16

(ii) B49', B50', B52400 (2nd 500 selected from seedling nursery) series H37/1933 and NCo310. Nineteen of these trials were reaped as plants, and the order of merit of the leading selections of this group is presented in Table XXII.

Four of the varieties, B49119, B52405, H37/1933 and NCo310 have done consistently well. B49119 was outstanding, as by free tillering and rapid growth it produced heavy yields of cane. Its juice quality was intermediate between that of B41227 and B4362. Unfortunately, the variety is slightly susceptible to mosaic and its stalk tends to be thin, especially under high rainfall conditions. The reputation of this variety is so high in Antigua and Barbados and so good is its promise in Jamaica that it is recommended for trial on a field scale.

H37/1933 gave heavy yields of cane with indifferent juice quality. The variety is very susceptible to mosaic, but has remained clean at Monymusk.

NCo310 produced very high quality juice but its cane yields were extremely variable, ratooning being particularly suspect. It is at its best on light alluvial irrigated soils.

B52405 produced average cane and sugar yields.

Lattice trials

(i) B51' and B51400 (3rd 500—selected from 1st year seedling trial) series. The following clones of these series gave good results as first ratoons—B5121, B51116, B51134, B51259, B51374, 3/206, 3/343 and 3/377. Their performance is shown in the order of merit presented in Table XXIII.

In addition to the eight varieties listed, five more—B51131, 3/21, 3/214, 3/311 and 3/365 were sent to estates for propagation, so that final trials could be planted as soon as possible after the final selection was made. The choice of the varieties to be included in the final trials has therefore been influenced by the experiment results and observations in the estates' nurseries. As a result B51259, B51374 and 3/206 were discarded because of poor juice. B51131 which at first seemed a very good variety has ratooned poorly, although it produced good juice. It has been discarded. The following clones have been retained for further testing—B5121, B51116, B51134, 3/343 and 3/377.

3/311 which is very vigorous and grew well in the propagation nurseries has been observed to suffer a wilting of the younger leaves while the other varieties appear unaffected. As this may be the result of a

condition affecting the conducting tissues of the stalk, the testing of the variety has been suspended until the cause of the abnormality is ascertained.

(ii) B52' and B52400 (4th 500—selected from first year seedling trial) series. The performance of the leading selections is shown in Table XXIV. Of the nine varieties which did well as plants, B52313, seems the most outstanding. Unfortunately, it tends to arrow freely, and its stalks are thin.

(iii) B53' series and foreign varieties. Thirteen clones from these groups have compared very favourably with the standards. Because of its record in Hawaii and very impressive growth in estate nurseries, H44/3098 is thought the most promising. The variety is slightly susceptible to mosaic, tillers sparsely but grows very rapidly. The stalks are thin and juice quality is good. It is recommended for field trials by estates.

The order of merit of these selections is given in Table XXV.

(iv) BJ54 series. Seven of the varieties have done fairly well but none appears outstanding. The order of merit is presented in Table XXVI.

(v) B54' series, Q and CP varieties. Seven lattice trials including selection from these series were planted during the year.

Qualitative assessment of varieties

An assessment of the vigour, juice quality and sugar yield of each variety in the experiments is presented in Table XXVII.

Propagation nurseries

The varieties which showed promise in the lattice trials have been multiplied at Bernard Lodge. As soon as the first results are available a selection will be made of those clones to be propagated on the estates for possible inclusion in final experiments.

Forty-one selections have been extended in the Regional Propagation Nurseries at Barnett, Caymanas, Frome, Jamaica Sugar Estates and Monymusk. Those that continue to show promise and remain free of mosaic will be planted in the 1959 lattice trials. The varieties concerned are eleven B53' and eleven BJ56' selections from the quarter chain row nurseries reaped this year, two of the B54' series which had to be re-imported, thirteen of the B55' second year seedling trial selections, Co313, Co360, Co413 and H38/443.

TABLE XXIII
SUMMARY OF 1ST RATOON RESULTS OF FINAL EXPERIMENTS
(order of merit based on sugar yields)

Variety	Parentage	WET WEST					IRRIGATED					NORTH COAST					ISLAND				
		A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
B5121	Co421 x B34104	1	2	1	0	2	0	1	0	0	2	1	1	1	0	1	2	3	2	0	5
B51116	B4362 x B34104	1	1	1	0	1	0	0	0	1	1	1	1	0	1	2	2	2	0	0	3
B51131	B45170 x B41227	0	2	0	0	2	1	2	1	0	2	0	0	0	0	1	1	4	1	0	5
B51134	Co421 x B37193	1	1	1	0	2	0	0	0	0	2	1	1	0	1	2	2	2	0	5	5
B51259	B40272 x Co290	2	2	2	0	2	0	1	0	0	1	-	-	-	-	2	3	2	0	0	3
3/343	B45170 x B41227	-	-	-	-	-	2	2	1	0	2	0	0	0	0	1	2	2	1	0	3

TABLE XXIV
SUMMARY OF PLANT AND 1ST RATOON RESULTS OF LATTICE TRIALS—B52' AND 4TH 500'
(order of merit based on sugar yields)

[illegible]

TABLE XXV
SUMMARY OF PLANT RESULTS OF LATTICE TRIALS—B53¹ AND FOREIGN VARIETIES
(order of merit based on sugar yields)

Variety	Parentage	Wet West					Wet East					Irrigated					Central					North Coast					Island				
		A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
B3529	B3907 x PO19878	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3532	B3179 x B42931	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3537	B3439 x B45151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3538	B3462 x B4098	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3539	B33548	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3540	C421 x B41211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3541	C4213 x PO12878	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3542	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3543	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3544	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3545	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3546	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3547	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3548	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3549	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3550	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3551	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3552	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3553	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3554	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3555	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3556	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3557	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3558	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3559	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3560	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3561	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3562	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3563	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3564	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3565	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3566	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3567	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3568	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3569	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3570	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3571	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3572	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3573	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3574	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3575	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3576	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3577	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3578	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3579	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3580	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3581	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3582	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3583	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3584	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3585	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3586	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3587	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3588	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3589	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3590	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3591	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3592	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3593	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3594	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3595	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3596	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3597	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3598	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3599	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3600	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3601	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3602	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3603	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3604	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3605	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3606	B3232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B3607	B3232	-	-	-	-	-	-	-	-	-	-	-	-																		

TABLE XXVI
SUMMARY OF PLANT RESULTS OF LATTICE TRIALS—BJ54'
(order of merit based on sugar yields)

Variety	Parentage	IRRIGATED					CENTRAL					NORTH COAST					CENTRAL				
		A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
BJ.5409 ..	Co421 x B46223	0	2	2	0	2	-	0	-	-	-	1	1	0	0	1	1	2	0	3	3
BJ.5412 ..	Co421 x B46223	2	2	2	0	2	0	0	0	0	1	1	1	0	0	1	3	2	0	0	4
BJ.5420 ..	B45170 x B41227	0	1	1	0	2	0	1	0	0	1	0	1	0	0	1	0	2	0	4	4
BJ.5422 ..	B45170 x B41227	0	1	1	0	1	1	1	0	1	0	1	0	0	1	1	3	2	0	3	3
BJ.5448 ..	B45170 x POJ2878	1	2	2	0	2	0	1	0	0	1	0	0	0	0	1	1	3	2	0	4
BJ.5482 ..	B44182 x B45151	1	1	1	0	2	1	1	0	0	1	0	0	0	0	1	2	2	1	0	4
BJ.5483 ..	B44182 x B45151	1	2	2	0	2	0	1	0	0	1	0	0	0	0	1	3	2	0	4	4

"A" = Number of times placed among first 5.
 "B" = " " " " " " " " 10.
 "C" = " " " " " " " " better than standard.
 "D" = " " " " " " " " significantly better than standard.
 "E" = " " " " " " " " experiments in which planted.

TABLE XXVII
QUALITATIVE ASSESSMENT OF VARIETIES

Variety	Cane	Sucrose	Sugar	Remarks	Variety	Cane	Sucrose	Sugar	Remarks
B47258 ..	F	FG	F		B51134	VG	F	FG	
B47306 ..	VF	F	P		B51259	VG	VF	FG	
B47310 ..	F	VF	F		B51374	G	VF	VF	
B47312 ..	F	FG	F		3/206	F	VF	P	
B47361 ..	VG	F	FG		3/214	VF	G	VF	
B51401(A17)	F	F	F		3/311	FG	F	F	
B51402(A26)	G	F	FG		3/343	FG	F	F	
B51403(A32)	FG	VP	VF		3/365	VF	VF	P	
B51405(C327)	F	F	VF		3/377	F	P	VP	
B51406(D95) ..	F	G	FG		B51129	FG	G	G	
B51407(E50)	FG	VF	F		B5235	G	F	VF	
B51408(E155)	FG	F	F		B52107	FG	F	VF	
B51410(E162)	G	G	G	V.G. ratooning C/stk. susceptible	B52158	VF	VF	P	
B51411(E168)	G	VF	F		B52162	F	F	VF	Mo. susceptible
B51413(F384)	FG	G	G		B52242	F	VF	P	Mo. susceptible
B51414(G483)	VG	F	G	C/stk. susceptible	B52253	F	VF	P	
B51415(H444)	F	G	G		B52256	VF	VF	VP	
B5147(1213)	G	P	F	Mo. C/stk. susceptible	B52257	F	F	P	
B51418(1216)	FG	F	F	C/stk. susceptible	B52298	FG	VF	VF	
B51419(J284)	FG	P	VP		B52306	F	VF	P	
B49119 ..	VG	G	VG		B52313	FG	FG	FG	
B49198 ..	G	VF	F		B52315	FG	VF	VF	
B49353 ..	FG	G	FG		B52316	F	VF	P	
B49396 ..	FG	FG	F		B52321	VF	F	VF	
B5037 ..	F	FG	F		B52341	VF	F	P	
B5041 ..	F	VP	VP		B52371	F	VF	VP	
B50347 ..	FG	FG	FG		B52389	G	VF	VF	
B52405 ..	FG	FG	G	Mo. susceptible	4/50 ..	F	VF	VP	
B52407 ..	G	FG	G	C/stk. susceptible	4/115 ..	F	FG	F	
B52408 ..	FG	FG	FG		4/222 ..	F	G	F	
B52409 ..	FG	F	F	Mo. susceptible	4/387 ..	FG	FG	F	
H37/1933 ..	VG	FG	G		B5352 ..	FG	G	FG	
NCo310 ..	VG	G	VG	C/stk. susceptible	B5387 ..	G	VG	VG	Mo. susceptible
B5121 ..	G	F	FG		B53165 ..	F	VF	P	
B51131 ..	FG	G	F		B53200 ..	G	G	G	
B53218 ..	G	G	G		H39/3633 ..	F	G	G	
B53261 ..	FG	VG	G		H39/5803 ..	VF	VG	G	
B53267 ..	VF	G	VF		H39/7028 ..	P	G	VF	
B53313 ..	F	F	VF		H44/3098 ..	VG	G	VG	
B53317 ..	VF	G	VF		NCo339 ..	F	G	F	
B53348 ..	G	VG	VG	C/stk. susceptible	PEPECUCA	F	VG	FG	
B53355 ..	P	F	VP		BJ5409 ..	G	F	F	
B53362 ..	F	F	FG		BJ5412 ..	G	FG	F	
D62/43 ..	FG	FG	FG		BJ5420 ..	FG	VF	VF	
EROS ..	P	VG	VF		BJ5422 ..	F	G	FG	
G176 ..	VP	VG	P		BJ5424 ..	G	VF	P	
H32/1063 ..	F	VF	VP	C/stk. susceptible	BJ5448 ..	G	F	VF	
H32/8560 ..	FG	G	FG		BJ5462 ..	G	F	FG	
H38/2915 ..	FG	VG	G		BJ5463 ..	FG	F	VF	
					B54193 ..	G	F	G	Mo. susceptible
					Q47 ..	G	VG	G	

Mo. = Mosaic. C/stk. = chlorotic streak.

Pre-lattice selection programme

Quarter chain row nurseries (stage 3 or 16 × 5 with 3 replicates)

(i) *B53' and BJ56' series.* The reaping results of the nurseries at Frome, Jamaica Sugar Estates and Vale Royal are tabulated in Appendix II. The observations on the Monymusk nursery are also presented. Some of the varieties which could not be included in the formal nurseries were planted in extension plots at the four sites so that they could be selected visually. Consequently, the varieties carried forward to the lattice stage have either given good sugar yields in the small trials or have compared favourably with the standards in unreplicated plots.

In all, twenty-two varieties were selected, nine B53' and four BJ56' from the trials and two B53' and seven BJ56' from the observation plots.

(ii) *B55' and BJ58' series.* Nurseries testing the selections from these series have been planted at Frome, Hampden, Jamaica Sugar Estates and Monymusk. Ninety-nine B55' series and sixty-two BJ58' series were selected.

(iii) *B54' and BJ57' series.* In addition to the nurseries planted at Frome, Monymusk and Vale Royal in 1957, one was planted at Jamaica Sugar Estates this year. Unfortunately, the Frome nursery grew poorly. The varieties were reselected and planted in another trial. The one at Monymusk germinated very badly and had to be replanted, and at Jamaica Sugar Estates germination was also poor.

The forty-three most promising selections have been extended so that if their reaping results prove favourable, their further testing can be accelerated.

Five-stool nurseries (stage 2 or 8 × 5)

(i) *B55' series.* The nurseries at Hampden, Jamaica Sugar Estates and Sevens were reaped. The one at Frome had to be abandoned because of very poor germination. Three hundred and eighteen clones were planted and 167 provisionally selected. Ninety-nine were finally selected for promotion to the Stage 3 nurseries.

(ii) *BJ58' series.* Of the 208 varieties planted in the nurseries at Frome and New Yarmouth, 62 have been provisionally selected.

(iii) *B56' series.* One hundred and two varieties of this series were planted in five-stool nurseries at Frome and Monymusk.

(iv) *BJ59' series.* Two hundred and thirty-one seedlings were selected from the seedling nurseries at Frome and New Yarmouth. The details of selection are given in Table XXVIII.

Single-stool Nurseries

(i) *B57' series.* One hundred and seventy-seven clones of this series were received in October, 1957, and 173 eventually germinated. Eighteen were discarded because of mosaic susceptibility in the pot stage, so that only 155 were planted in the Caymanas nursery. Since then four have developed mosaic symptoms. The nursery was cut back in August, 1958.

(ii) *BJ60' series (1958 seedlings).* Of the 45,299 seedlings potted from 110 crosses this year, 5,049 were discarded because of mosaic susceptibility. Thirty-seven thousand, four hundred and thirty-five were shared between the Frome and the Bernard Lodge nurseries. At Bernard Lodge 13,624 single plants and 984 bunches (equivalent to 5,720 singles), and at Frome 12,583 single plants and 948 bunches (equivalent to 5,508 singles) were planted. The nurseries were cut back in August. The parentages of the crosses and the number of seedlings potted are given in Table XXIX.

New introductions

(i) *B58' series.* Cuttings of the 221 varieties of this series were received in October. Two hundred and twelve germinated, and 74 of the varieties developed mosaic after inoculation. The remaining varieties will be planted in the Monymusk nursery early in 1959.

(ii) *Miscellaneous varieties.* The following parent varieties were reimported: Ball569, B603, and 28NG13 (which are all noble canes), B35276, B42304 (mosaic susceptible), B43375 (mosaic susceptible) and B46103 (mosaic susceptible).

The following commercial varieties were received:—
Indian: Co475 (mosaic susceptible), Co678, Co775, Co991 (mosaic susceptible) Australian (Colonial Sugar Refining Co.): Ragnar and Vesta Puerto Rican: PR980.

H. DISEASES AND PESTS

Nematode situation

At the beginning of the year the facts established regarding the root condition at Worthy Park were as follows:—

- (i) Nematodes found in roots and surrounding soils were species of *Helicotylenchus*, *Pratylenchus*, *Crictonemoides*, *Tylenchus*, and *Aphelenchus*, all known to be root parasites; *Longidorus* and *Dorylaimus*, doubtful parasites; and *Mononchus*, *Aphelenchoides*, *Rhabditis*, *Discolaimus*, *Pangrolaimus*, *Eucephalobus* and *Prismatolaimus*, predatory or saprophytic types.
- (ii) The leaf weights taken from the fumigation experiment at Bullet Tree 1 suggested that:—
 - (a) B41227 was less severely affected than B4362.
 - (b) The insecticides, B.H.C., Dieldrin and Chlordane, produced a small beneficial effect.
 - (c) The responses to the three fumigants were variable—D.D. resulting in very big increases, and Nemagon and ethylene dibromide in much smaller benefits.

The visual and estimated responses of D.D. being greatest, samples of roots from D.D. treated blocks were assayed for nematode content. It was found that the nematode population (parasitic and non-saprophytic types together) had increased in the D.D. treated plots by 118% in B41227 and by 32% in B4362 over

TABLE XXVIII
BJ59 SERIES (1956-57 SEEDLINGS)—SELECTION DETAILS

Parentage	Cross	Potted	Mosaic	PLANTED			MOSAIC			SELECTION					
				Frome	New Yar- month	Total	Frome	New Yar- month	Total	Grand total	% of seedlings potted	Frome	Yar- month	Total	% seedlings planted
Ball569 x CP38/34	8	32	10	13	9	22	1	0	1	11	34	0	0	0	0.7
B3439 x B37193	39	4,525	48	2,173	2,076	4,249	12	95	107	155	3	0	31	31	0
B34102 x B45151	43	180	2	71	83	154	2	6	8	10	6	0	0	0	0
B35206 x NC0310	13	1,241	285	540	330	870	133	13	146	431	35	6	7	13	1.0
B35207 x B35218	2	999	249	388	335	723	128	2	130	379	38	7	14	21	3.0
B35207 x POJ2878	4	365	2	174	155	329	20	7	27	29	8	1	6	7	2.0
B37161 x B47419	9	848	198	350	184	534	80	13	93	291	34	3	5	8	1.0
B37161 x B51242	36	22	1	10	11	21	0	0	0	1	5	0	0	0	0
B37161 x CP44/155	22	93	17	40	35	75	2	0	2	19	20	0	0	0	2.0
B37172 x B41211	27	192	16	48	64	112	3	0	3	19	10	0	2	2	1.0
B39157 x B47419	41	229	3	131	88	219	18	4	22	25	11	0	2	2	0
B39254 x B49119	11	51	10	22	19	41	5	0	5	15	29	0	0	0	0
B39254 x NC0310	17	51	20	0	23	23	0	2	2	22	43	0	0	0	0
B42304 x B37193	33	1,338	14	541	619	1,160	4	3	7	21	2	2	15	17	1.0
B42279 x B41211	42	784	4	377	343	720	6	20	26	30	4	0	5	5	0.7
B42304 x B49119	19	2,540	60	1,300	1,042	2,342	53	22	75	135	5	0	16	16	0.7
B4362 x B4098	30	277	44	128	105	233	11	3	14	58	21	0	8	8	3.0
B4362 x B43235	29	357	87	150	97	247	39	10	49	136	38	2	2	4	2.0
B4362 x B45236	25	539	37	259	238	497	5	0	5	42	8	0	4	4	0.8
B4362 x B52178	35	64	0	24	29	53	5	1	6	6	9	0	0	0	0
B4362 x CL41/223	24	204	78	80	42	122	1	1	2	80	39	0	1	1	6.8
B4362 x Co419	18	1,571	140	700	650	1,350	27	46	73	213	14	1	9	10	0.7
B43358 x B51353	37	198	13	72	69	141	11	8	19	32	16	0	1	1	0.7
B45137 x B4362	1	702	210	260	229	489	32	2	34	244	35	1	3	4	0.8
B45154 x B46364	14	2,700	645	1,009	1,027	2,036	345	73	418	1,063	39	1	9	10	0.5
B45170 x B41227	32	215	35	80	100	180	2	3	5	40	19	0	5	5	3.0
B4562 x B47419	38	61	0	24	34	58	0	1	1	1	2	0	0	0	0
B43862 x B41227	26	896	167	408	311	719	6	26	32	199	22	1	12	13	2.0
B49353 x B41227	21	148	19	40	32	72	0	0	0	19	13	0	2	2	3.0
B49372 x B49231	23	143	6	46	138	84	2	3	5	11	8	0	1	1	1.0
B5055 x B45151	28	290	48	120	116	236	6	6	12	60	21	0	1	1	0.4
B50151 x B4744	15	254	101	133	19	152	27	2	29	130	51	1	0	1	0.7
B51311 x B49119	40	465	136	179	142	321	23	17	40	176	38	0	1	1	0.3
B52371 x B41227	5	271	19	129	97	226	4	0	4	23	8	0	2	2	0.9
B53165 x B4744	10	257	44	118	85	203	17	7	24	68	26	0	2	2	1.0
Co360 x NC0310	16	780	110	190	472	662	52	4	56	166	21	0	3	3	0.5
Co421 x B4098	31	93	4	39	49	88	1	2	3	7	8	0	1	1	1.0
H32:8560 x POJ2878	12	637	22	290	262	552	23	7	30	52	8	3	10	13	2.0
M134:32 x B41227	6	160	23	72	54	126	2	7	3	26	16	0	2	2	2.0
POJ2878 x B34104	34	871	57	408	404	812	5	1	6	63	7	0	12	12	1.0
POJ2878 x B41227	20	200	3	85	82	167	8	2	10	13	7	0	0	0	1.0
POJ2878 x B41227	3	857	14	408	427	835	13	8	21	35	4	0	3	3	0.3
POJ3016 x B41227	7	590	8	265	247	512	4	0	4	12	2	0	3	3	0.0
		27,227	3,009	11,894	10,873	22,767	1,133	421	1,553	4,562	17	31	200	231	1.0

the untreated plots. This is not an uncommon phenomenon and can be explained by the fact that D.D. having initially vastly reduced the nematode population, enabled normal root development, that when the nematode population began to increase, the flush of new roots provided ideal nutritional and breeding conditions. Thus a rapid build-up of nematodes occurred, resulting in a greater number per unit weight of root. The difference between population increases in B41227 and B4362 is probably reflected in their relative rates of root production. This may be the reason why B41227 is less affected by the condition, due to its ability to produce roots quickly.

The plant cane yields of the fumigation experiment at Bullet Tree, 1 Worthy Park, confirmed the trends suggested by leaf weights at 4 months, and responses increased in some cases, for example from 54 to 248% due to D.D. applications. Nemagon and Chlordane gave encouraging responses (108%). In spite of these increases the production of B4362 on the best plots never exceeded 48% of the average 1958 B4362 plant cane yield for the estate, whereas the best B41227 plots reached a level of 108% of its 1958 average plant yield. It seems prudent therefore not to plant B4362 on areas maintaining high populations of root parasitic nematodes. Failure of B4362 has also been observed at Richmond/Llandovery, Appleton and Frome where parasitic nematodes occur in roots.

Significant increases obtained from Chlordane and Dieldrin, suggest that soil animals may contribute to the condition at Worthy Park. Chlordane has been applied with great effect as a general field practice in the United States on heavy cane soils, with a reduction of 50% in soil animals. Work is being initiated to study the effects of Chlordane on cane yield and soil fauna.

A leaf weight estimation of the 1st ratoon crop at 5 months showed no difference between nematocidal and insecticide treatments in the experiment at Bullet Tree 1 at Worthy Park, and no responses to these treatments. This seems to suggest that the condition there is most important in the establishment of the plant canes only.

An experiment was laid down in the Bullet Tree area to investigate the possibility of reinfestation of fumigated areas by parasitic nematodes. It is hoped to establish if horizontal or lateral movement of water can carry nematodes to such areas or if fumigation kills only such nematodes as have been hatched from the egg, leaving viable eggs untouched.

Pot experiments have been initiated to compare heat sterilization and no sterilization on soil infested with nematodes and to study the effects of D.D. Nemagon, and E.D.B. on heat-sterilized soils, the object of this latter experiment being to attempt to evaluate the extent of the "amendment" effect of D.D. over and above its nematocidal properties.

A large number of fumigation trials were laid down in the 1958 crop to study the widespread effect of soil fumigation in the field. Of the 85 examined by the end of the year, leaf weights indicated significant responses in only three cases, though several more were

approaching significance and will probably show this in the plant cane yield.

West Indian Cane Fly (*Saccharosydne saccharivora*)

Outbreaks of serious import have occurred on three estates this year. Monymusk had the infestation over 2,000 acres; New Yarmouth about 150 acres and Caymanas had localized patches. "Motoblo" sprayings of Malathion at 1 pint per acre at Monymusk have been in operation throughout the year with varying success, and this pest is still not under control.

The fly is most damaging to young plants and ratoons. The eggs are laid in the midrib of the cane leaf and the nymphs and adults pierce the epidermis of the underside of the leaf and extract the cell contents. This causes considerable drying of leaves and, in the case of young plants, acute stunting. Photo synthetic activity of the lower green leaves is impaired due to the growth of the black fungus *Capnodium* spreading over the "honeydew" excreted by the insects, and which has fallen on these leaves.

Eradication of this insect is rendered difficult since the "Motoblo" gangs can only operate successfully in fairly low cane. Thus the fly has ample opportunity to breed in tall cane and invade newly planted and newly cut fields.

Suspected bacterial infection

In July, at Rose Hall and Monymusk an unusual leaf drying condition was noted in one of the 3rd 500 series (3/311). The third fully opened leaf became yellowish and finally died. The second and first leaves were also yellowish, though the spindle leaves remained green. On splitting the apical region of the stem longitudinally a red discoloration was noticed and a brown rotten-looking area was seen in the spindle leaves just above the apex.

Isolations were made by the Research Department and the Botany Department of the University College of the West Indies from this variety and from others, notably B4362, showing similar leaf-drying symptoms, but no pathogenic organism was detected. It is thought that soil conditions affected root development and the water relations of the cane plants were upset.

Ratoon stunting

Co421

The experiment laid out at Long Pond to observe the effects of inoculating planting material of Co421 with juice obtained from canes suspected of being infected, and the benefits to be derived from heat treatment, was reaped as a 3rd ratoon crop. Counts of symptoms were taken at harvest time, and the relationship previously established between % symptoms and yield were confirmed. The following conclusions may be drawn from this trial:—

- (i) Inoculation of Co421 with juice expressed from canes showing the symptoms of ratoon stunting disease significantly decreased yield and increased incidence of symptoms.

TABLE XXIX

BJ60s (1957-58 SEEDLINGS)

Percentage	POTTED		Total	MOSAIC		BERNARD LODGE			PLANTED		Total	
	Singles	In bunches		Number	%	Singles	In bunches	Subtotal	Singles	In bunches		Subtotal
Ball569	1	—	1	1	—	1	—	1	—	—	1	
x B44131	4	—	4	2	50	2	—	2	—	—	2	
Ball569	30	—	30	4	13	13	—	13	12	—	25	
x B53269	784	—	784	104	13	331	—	331	317	—	648	
Ball569	119	—	119	30	25	43	—	43	42	—	85	
x Co432	115	—	115	55	48	24	—	24	32	—	56	
B3353	29	—	29	9	31	12	—	12	8	—	20	
x B34104	381	—	381	54	14	167	—	167	145	—	312	
x B43235	570	—	570	68	3	214	—	214	150	—	382	
B3439	349	1,752	2,322	129	37	116	960	1,174	88	732	2,056	
x B46364	990	—	990	21	1	492	804	1,296	396	732	2,024	
B3439	41	1,800	2,790	21	1	492	804	1,296	396	732	2,424	
x B51242	41	—	41	2	5	20	—	20	19	—	39	
B3439	1	—	1	1	100	—	—	—	—	—	—	
x B51321	266	—	266	171	64	40	—	40	36	—	76	
B3439	85	—	85	44	7	44	—	44	40	—	84	
x B33200	14	—	14	1	7	6	—	6	7	—	13	
B3439	95	—	95	23	24	35	—	35	37	—	72	
x B41227	5	—	5	—	—	3	—	3	2	—	5	
x CP38334	1	—	1	—	—	1	—	1	—	—	1	
PO12878	839	—	839	9	100	401	—	401	404	—	805	
x B5207	276	—	276	44	16	107	—	107	107	—	214	
x 28NG13	3	—	3	2	53	2	—	2	1	—	3	
B35207	40	—	40	21	4	11	—	11	8	—	19	
x B50377	141	—	141	5	4	68	—	68	67	—	135	
B37161	—	—	—	4	7	26	—	26	25	—	51	
x B54193	55	—	55	—	31	122	—	122	222	—	344	
x Q50	522	—	522	104	—	—	—	—	—	—	—	
B37161	1	—	1	—	—	—	—	—	—	—	—	
x B3837	—	—	—	—	—	—	—	—	—	—	—	
B37172	22	—	22	4	18	9	—	9	9	—	18	
x B47151	—	—	—	—	—	—	—	—	—	—	—	
B37172	13	—	13	5	38	4	—	4	4	—	8	
x B37226	3	—	3	2	67	1	—	1	—	—	1	
x B4744	513	—	513	12	2	209	—	209	283	—	482	
B38233	25	—	25	4	16	10	—	10	11	—	21	
x B39254	5	—	5	1	20	2	—	2	2	—	4	
x B4744	5	—	5	1	20	2	—	2	2	—	4	
x Pindar	—	—	—	1	20	2	—	2	—	—	—	
B39254	—	—	—	1	20	2	—	2	—	—	—	
x Q50	184	—	184	18	10	80	—	80	84	—	164	
B4092	1,168	—	1,168	73	6	515	—	515	521	—	1,036	
x B40105	879	—	879	30	3	400	—	400	432	—	832	
x B41227	21	—	21	13	62	4	—	4	4	—	8	
B4145	136	—	136	3	2	65	—	65	68	—	133	
x B371933	618	—	618	72	12	270	—	270	263	—	533	
x B4744	58	—	58	14	24	23	—	23	19	—	42	
B4214	2	—	2	1	50	1	—	1	—	—	1	
x B4744	606	1,200	1,806	5	8	257	618	875	166	558	1,599	
B4362	177	—	177	14	8	74	—	74	86	—	160	
x B49119	140	—	140	4	3	79	—	79	54	—	133	
B4362	51	—	51	26	51	4	—	4	21	—	21	
x B4373	660	—	660	24	4	461	—	461	167	—	628	
B4373	277	—	277	20	7	129	—	129	127	—	256	
x B43283	631	—	631	170	27	170	—	170	254	—	424	
x B46136	3	—	3	—	—	2	—	2	1	—	3	
B44111	19	—	19	3	16	8	—	8	8	—	16	
x B45151	823	—	823	79	10	327	—	327	403	—	730	
x B44341	17	—	17	4	24	6	—	6	7	—	13	
B4547	—	—	—	—	—	—	—	—	—	—	—	
x B47258	—	—	—	—	—	—	—	—	—	—	—	

B45137	x B47258	44	14	32	14	6	13	2	13	27
B45152	x B43104	9	9	11	6	6	13	2	13	8
B45154	x B4744	130	130	17	45	45	43	88	43	88
B45220	x B4604	223	223	15	101	101	104	205	104	205
B45220	x B4744	121	121	7	41	41	36	77	36	77
B45225	x Q813	290	290	2	143	143	138	281	138	281
B47155	x B49119	676	676	7	307	307	311	618	311	618
B47183	x Ajax	5	5	—	3	3	2	5	2	5
B48165	x B603	—	—	—	—	—	—	—	—	—
B48209	x B49119	97	97	34	31	31	33	64	33	64
B48330	x B49119	596	596	40	163	163	150	313	150	313
B48330	x Cornus	—	—	—	—	—	—	—	—	—
B48361	x Ajax	14	—	50	1	1	1	2	1	2
B4906	x B4098	213	4,477	6	655	1,795	473	3,468	1,673	3,468
B4906	x B41227	905	278	31	385	385	178	563	178	563
B4906	x B4744	97	89	92	2	2	2	4	2	4
B49170	x Ajax	—	—	—	—	—	—	—	—	—
B49388	x B49119	613	69	11	261	261	283	544	283	544
B5011	x B47419	105	105	10	48	48	45	93	45	93
B5012	x B34104	54	54	22	19	19	20	39	20	39
B5012	x B52298	2	—	—	2	2	2	2	2	2
B5055	x B45151	584	584	10	264	264	259	523	259	523
B5082	x B4098	14	14	—	7	7	7	14	7	14
B51129	x B4098	117	117	33	38	38	39	77	39	77
B51131	x B4098	155	155	33	54	54	41	95	41	95
B51311	x B4788	89	89	33	28	28	28	56	28	56
B5401	x B4098	83	83	28	30	30	30	60	30	60
B5452	x B41211	52	52	6	24	24	20	44	20	44
B5651	x B4098	2	2	100	—	—	—	—	—	—
B5652	x B4098	34	34	53	7	7	8	15	8	15
Co413	x B4104	6	6	83	1	1	—	1	—	1
Co413	x B4098	970	159	16	438	438	296	734	296	734
Co413	x B4337	—	—	—	—	—	—	—	—	—
Co413	x B45151	570	570	14	228	228	216	444	216	444
Co413	x NCo310	379	379	16	151	151	151	302	151	302
Co421	x B4098	663	663	2	350	350	284	634	284	634
Co421	x B5411	4	—	4	—	—	2	4	2	4
Co421	x Cornus	111	111	—	53	53	—	53	—	53
F36/819	x B41211	1,001	1,001	7	460	460	453	913	453	913
H32/8560	x B34104	95	95	42	27	27	26	53	26	53
H32/8560	x B41211	401	401	33	133	133	133	266	133	266
H32/8560	x B43234	6	6	17	2	2	—	—	—	—
H32/8560	x B49119	1,060	1,060	22	400	400	325	725	325	725
H32/8560	x B50377	220	220	16	88	88	85	173	85	173
H32/8560	x Co281	24	24	92	2	2	2	2	2	2
D62/43	x B46136	—	—	—	—	—	—	—	—	—
M134/32	x B4098	11	9	82	1	1	—	1	—	1
Otaheite	x B39257	—	—	—	—	—	—	—	—	—
Pepecuca	x B41211	12	12	8	6	6	5	11	5	11
POJ2878	x B52298	4	4	—	2	2	2	4	2	4
POJ3016	x B3337	385	385	45	98	98	96	194	96	194
PR1000	x B37193	141	141	69	69	69	70	139	70	139
PR1000	x B4098	1,835	3,119	2	625	1,545	585	3,030	1,485	3,030
PR1000	x B45151	108	108	4	50	50	51	101	51	101
PR1000	x B49119	2,448	4,434	2	1,078	1,972	1,097	4,077	2,105	4,077
PR1000	x B52298	309	309	4	157	157	109	266	109	266
Trojan	x B34104	56	56	88	2	2	1	3	1	3
Trojan	x B4098	406	406	22	129	129	186	315	186	315
Trojan	x B41211	1,251	1,251	33	386	386	379	765	379	765
Trojan	x B45151	1,145	1,931	14	408	792	430	1,590	798	1,590
Trojan	x B5387	6	6	50	1	1	1	2	—	—
Trojan	x CF29/116	332	332	5	151	151	151	302	151	302
Trojan	x Co281	5	5	60	2	2	—	2	—	2
Trojan	x POJ2878	132	132	45	34	34	31	65	31	65
Tukuyu 2	x B417	1	1	—	1	1	—	1	—	1
		33,600	11,699	11	13,624	5,720	12,553	18,091	5,508	37,435

- (ii) Hot water treatment at 52° C. for 1 to 1.5 hours increased yield and decreased incidence of symptoms and could be effective in controlling the disease.
- (iii) The control of this disease in Co421 by planting seed pieces from cane not showing symptoms is not possible.

Susceptibility of commercial and promising varieties

As the presence of ratoon stunting disease has been demonstrated in Co421 and as similar symptoms had been noticed previously by Dr. R. L. Steindl in other varieties, it was decided to examine the effects of inoculating the commercial varieties B4362, B42231, B37172, B34104, B3439 and Co331 and other potentially good-yielding varieties, with ratoon stunting virus and to study the effects of heat-treatment on the course of the disease.

Twenty-three varieties were included in the trial and subjected to four treatments—immersion in hot water for 1 to 1.5 hours at 52° C. (heat treated); heat treated and inoculated; not heat treated; and not heat treated but inoculated. The treatments for each variety was laid out in the form of a 4 × 4 latin square. The plot size was 1 row × 0.25 chain (= 1/660 acre

each) in eighteen varieties, and 1 row × 0.125 chain (= 1/1320 acre each) in five varieties. The experiment was reaped in February, 1958, as 20-month old fall plants. The proportion of rotten cane was appreciable and small moth borer infestation (*Diatraea saccharalis*) was high and consequently the incidence of red-rot (*Phylospora tucumanensis*). The cane was examined for symptoms of ratoon stunting on harvesting by splitting three canes from each plot longitudinally. The results of the trial are given in Table XXX.

I. CHEMICAL LABORATORY

The number and type of determinations dealt with in the chemical laboratory during the year are given in Table XXXI.

J. FACTORY DATA

Factory and distillery weekly reports as well as final crop reports were received from all factories, checked and circulated. A summary of factory performance together with comparisons of previous years' figures is given in the tables of Appendix III.

Jamaica Sugar Estates and Serge Island went over to the bulk handling of raw sugar, each shipping through a quay-side bulk sugar store, owned and operated by Messrs. Jamaica Sugar Estates (Scotland) Limited, and similar to the Salt River Store of the West Indies Sugar Company wharves. The sugar is handled from store to ship's hold in metal hoppers resting on cradles mounted on light railway chasses and elevated by the ship's tackle.

Factory improvement and investment have continued. An automatic draught regulator was installed at one factory, a water softening plant for boiler feed water at another, and a new boiler at a third, a new cane gantry at one factory, a second set of knives at another, a new and additional 4th, 3-roller mill at another, and Edwards mill hydraulics at a fourth factory. Two factories added new evaporators, another 3 new vessels, and four factories installed automatic evaporator level controls. Two electrical centrifugals were also installed.

K. LIVESTOCK DIVISION

Introduction and Summary

1. In October, Dr. Trevor Clacken, D.V.M., joined the Department as the third livestock officer; he has been stationed at Savanna-la-mar to cover Estates in the western part of the island.

2. Alumina Jamaica Limited with their considerable cattle interests became full participating members of the Livestock Scheme in October. The total number of stock, including working stock within the Scheme is now over 20,000 head.

3. Mr. G. N. Gould, J.P., M.R.C.V.S., President of the Royal College of Veterinary Surgeons (of England) visited Jamaica in May at the invitation of the British Council. He was able to spend a day with Drs. Clay and Nestel during which visits were made to Caymanas and Worthy Park.

TABLE XXX

YIELD RESPONSES TO INOCULATION AND HEAT TREATMENT

Variety	% lowering of yield due to inoculation	% increase in yield due to heat treatment
B51414	27.80§	0.26
B37161	26.16* ¹	14.09
B4362	23.12§	— 9.27
B51413	22.25*	5.41
B51406	20.38	— 3.73
B51410	16.54	0.35
B47361	14.81*† ²	2.46
B41227	14.72*	1.28
B51418	14.27	24.77
B37172	14.22*	—11.77*
B51417	9.41	10.14
B51401	8.18	— 0.32
B51402	7.92	0.79
B51419	6.70	—10.41
B51403	5.70	—12.01
Co331	5.17	7.47
B34104	4.74	— 3.53
B47310	— 4.70	—17.55*
B47258	— 0.13	6.85
B42231	— 2.13	—10.99†
B51411	— 2.74	— 5.83
B43214	— 7.85	— 1.30
B51407	—11.39	1.19
Average	+ 9.68	— 0.51

* Significant at 5% level.

† Approaching significance at 5% level.

‡ Significant at 10% level.

§ Approaching significance at 10% level.

|| Significant interaction at 5% level.

¹ heat treatment predisposes cane to inoculation of ratoon stunting disease.

² heat treatment more effective on inoculated material.

TABLE XXXI
LABORATORY ANALYSES UNDERTAKEN DURING 1958

1. SOIL ANALYSIS						Total
	pH	Free CaCO ₃	Lime requirement	p.p.m. available		
				P ₂ O ₅	K ₂ O	
	280	9	16	196	148	649
2. LEAF ANALYSES—CANE, GRASS						
% dry material						
	N	P ₂ O ₅	K ₂ O	Mg.	Fibre	% dry matter
	4236	4427	4355	2	73	93
13,186						
3. JUICE ANALYSES						
	Brix		Pol %	% Red. Sugars		
	2288		2288	289		4,865
4. SUGAR AND MOLASSES, ETC.						
	Brix		% Pol or Sucrose	% Total Sugars		
Bulk loading:						
Sugars ..	..	—	385	—		
Molasses ..	..	32	32	32		481
5. MISCELLANEOUS ANALYSES						
						154
						19,335

4. The Fourth Inter American Conference on Livestock Production was held in Kingston during July and August. Meetings of local interest were attended and a synopsis of their proceedings was presented in one of the livestock bulletins. One of the Field Days organized for Conference delegates included visits to two sugar estates, Caymanas and Worthy Park. At the latter estate the cattle breeding and pasture development programmes were discussed in some detail.

5. Dr. Nestel attended a meeting of the "Beef Sub-Committee" set up by the Livestock Association to make representations to Government on the economics of the beef industry.

6. Dr. Clay attended three meetings of the Livestock Policy Conference held at the Ministry of Agriculture and Lands.

7. At the Annual Conference of the Jamaican Association of Sugar Technologists held in November, a paper entitled "Beef Production on Sugar Estates in Jamaica" was presented by Dr. Clay.

8. The severe drought early in the year followed by two periods of flood rains in May and September created feed shortages on certain of the low lying estates. This was aggravated in some cases by the ravages of caterpillars following the September floods.

9. The high incidence of various leaf hoppers in some Pangola pastures was noted in the latter part of the year and their effects on pasture growth is being carefully watched.

10. On a few estates a condition similar in many ways to "Virus Diarrhoea" occurred in the cattle during the early part of the year. This responded to treatment with intestinal astringents.

11. An outbreak of "Pinkeye" occurring in St. Ann caused livestock movement restrictions to be imposed within that parish and caused some inconvenience to estates in neighbouring parishes in their stock marketing arrangements.

12. 1958 has been the first full year of operation of the Livestock Scheme of the Sugar Manufacturers' Association. Questions of general policy and the outlining of development programmes have been subjects to which the Officers in the Scheme have devoted much of their time, and reports embodying their main recommendations and suggestions have been submitted to individual managements.

13. With the help and guidance of Mr. Morgan Rees, Agricultural Economist of the Ministry of Agriculture and Lands, a system of Livestock Costings has been initiated on six estates and it is hoped to extend this eventually to all estates in the Scheme.

14. With the accent on commercial beef production, planned cross-breeding programmes have been outlined and are being followed on most estates.

15. Organization of the breeding herds and the setting up of standardized record keeping systems have been carried out. Records are also being collected for transference to a system of punched cards kept at the Research Department.

16. Improvements in stock handling facilities have been made on a number of estates leading to considerable savings of time and effort in the routine handling of stock. The use of electric fencing has been found practical on some estates and several units have been obtained.

17. Some preliminary studies on the pre-weaning growth of calves and the effects of the routine operations of castrating, branding and worming were carried out.

18. The means of obtaining a corrected 7-month "weaning" weight as one of the main bases for selection of breeding animals was studied.

19. Preliminary trials on a small scale were carried out to determine the benefits of hormone implants in fattening steers. One of the trials completed gave encouraging results and further trials are in progress.

20. Small fertilizer trials on Pangola grass and Guinea grass were laid down on seven estates, but these were discontinued after two or three reapings had been made, in favour of larger production trials which are being planned for 1959.

21. A trial comparing the growth rate of steers maintained on upland grazings against similar steers shipped from the hills and fattened on lowland pastures has been started.

22. With the kind co-operation of the Jamaica Citrus Growers Association Limited, Bog Walk, trials have been planned to start in March, 1959, utilizing cheap by-products of local industries to compound feeds for fattening steers.

23. With a view to establishing tuberculosis free herds, TB testing has been carried out on several estates where suitable handling facilities are available and reacting animals have been slaughtered. During the coming year it is intended that this programme of testing should be completed.

24. Observations on a very limited number of animals imported from the Southern United States have indicated means of minimizing the risks of such animals succumbing to tick fevers during the acclimatisation period.

25. During the year seven Livestock Bulletins were prepared on subjects considered to be of importance in local livestock production.

26. The interest and help shown on all the estates has been most encouraging. The considerable assistance given by staff members of the Research Department has been greatly appreciated.

General

The main object of the Livestock Division is to promote improved livestock production on the non-cane lands of sugar estates. Though the Scheme has been staffed by veterinary surgeons, clinical work has occupied only a minor part of their time, the emphasis being placed more on work of an advisory nature. During the first year of the operation of the Scheme, much time has of necessity been devoted to discussion with managements and directors on matters of general

policy and on development programmes. Dr. Braude's recent report on the local pig industry stated that it was 50 years behind Europe and the United States in its workings. In many respects this criticism is applicable to the local beef industry where a disproportionate amount of emphasis has been placed on breeding, whereas it is largely through feeding and management that efficient beef production can be achieved.

Cattle on sugar estates have in the past been maintained primarily as a source of working stock for cane and as a convenient means of occupying and deriving some benefit from otherwise idle lands. Only in recent years has the accent moved to commercial beef production, and then economic considerations within the beef industry have not encouraged any intensive development in this direction. As a result this aspect of estates' enterprises has been maintained under an "extensive" system of management with little thought to its becoming an economically profitable venture. Due to the sad lack in detailed organization and intensive management required of an efficient agricultural undertaking, as well as being somewhat undercapitalized, the status of the beef industry on sugar estates is such as to be ill-prepared to take the fullest advantage of any improvement in beef prices. During the past years of low beef prices the cattle industry on estates has been maintained at considerable losses to the owners. Its requirements both in respect to capital and management have always been secondary to and dependent on the sugar enterprise. For this to have been so in the past is understandable. However, conditions today with prospects of steadily improving prices, increased land taxation, and not least in importance Government's attitude towards undeveloped lands, warrant estates' cattle enterprises being considered more and more as being independent of the sugar industry, and development and management must be so organized as to achieve this end. It is unlikely in view of the present state of relative underdevelopment that this can be brought about very rapidly as heavy capital investment is first necessary. For this to be undertaken it requires confidence in the future of beef in Jamaica. Experience of the past and the influence of politics on this particular industry must naturally lead to caution in this respect. Nevertheless, it is on the hope and belief that this independence of the beef enterprise must eventually come about that Officers of the Scheme have based their recommendations to the various managements. It has already been possible to make improvements in herd management without major capital expense. However, the stage is fast being reached where only by pasture development and subdivision can further progress be made. It is most important that any development should be part of an organized plan, and that it should be designed to supplement the weakest part of the grazing. Several estates are developing grazing maps on which all the available pastures are plotted. With the aid of such maps a 3- or 5-year development programme can readily be formulated.

As a means of obtaining an early appreciation of the problems, particularly the cost and the increased

production associated with intensive management, it has been recommended that intensification be applied to a small section of the grazing area of each farm initially. In this way the inevitable extravagances and errors that are likely to occur in attempting new methods will be confined, and can be avoided in the general extension of these methods to the remainder of the farm. Though we believe that this approach offers most promise for individual estates it is hoped that in addition to this it will be possible to set up three fairly independent "pilot" areas on different estates representing three different grassland environments. The intention will be to maintain these areas entirely independent of the remainder of the farm of which they constitute a part. By using these "farms" primarily as demonstration or "pilot" projects with accurately kept accounts, a fair impression should be gained of the economic prospects of intensified beef production in Jamaica. The results obtained will indicate the degree of confidence that can be placed in the industry and the part it can play in optimum land utilization on sugar estates.

Table I shows the number and distribution of different types of animals for which the Scheme is catering. The early stages of the Scheme may be noted from the large proportion of breeding cows and young females.

dealt with was the "Economics of the Beef Cattle Industry in Jamaica." As a result of the lengthy discussions on the uncertain economic state of the industry, a special sub-committee was set up under the chairmanship of Mr. O. M. Clarke to investigate this question and to recommend a price to producers that will ensure a fair return on their capital. Through the findings and recommendations of this committee, it is hoped that a more encouraging economic picture may emerge within the industry with prices being related realistically to actual costs of production. The work of this committee will not be complete until some time in 1959.

Farm costings

There have been little or no detailed studies of the economics of beef production in Jamaica in recent years. As one of the main purposes of farm management advice is to assist in running the cattle farms within the Scheme as successful businesses, early consideration has been given to studying farm costings.

Mr. A. M. Morgan Rees, the Chief Agricultural Economist of the Ministry of Agriculture has given invaluable assistance in initiating this study, and has drawn up a series of comprehensive costings forms following visits to a number of estates to see the type of accounts kept.

TABLE XXXII
NO. AND DISTRIBUTION OF DIFFERENT TYPES OF ANIMALS

Estate	Horsekind	Working Steers	Bulls (young and Service)	Breeding Cows	Young Males C—3 y.o.	Young Females C—4 y.o.	Fattening cows
Long Pond and Vale Royal	371	161	25	408	365	417	37
Frome	488	1,879	25	335	378	465	35
Serge Island	66	68	3	127	99	95	—
Appleton	77	25	1	25	15	18	—
Jamaica Sugar Estates	104	155	4	152	115	143	—
Gray's Inn Central	36	52	3	108	64	76	—
Richmond/Llandovery	82	—	4	66	59	79	—
Holland	42	86	5	182	121	95	—
Worthy Park	40	—	63	488	226	439	126
Caymanas	120	8	19	330	242	288	—
Hampden	9	—	6	87	122	131	34
Barnett	2	—	8	158	209	176	59
Caymanas	82	44	22	240	262	240	5
Rose Hall	56	—	2	41	17	42	—
Monymusk	264	14	2	197	10	105	—
Sevens	70	5	2	69	34	59	—
United Estates	104	185	52	1,401	258	649	121
Alumina Jamaica	90	—	103	1,659	1,250	1,161	—
	2,103	2,682	349	6,073	3,846	4,678	417 — 20,148

Livestock Policy Conference—Ministry of Agriculture and Lands

Mr. O. M. Clarke, Chairman of the S.M.A. Livestock Committee and Dr. D. Clay, representing the Livestock interests of the S.M.A. attended meetings of the Livestock Policy Conference held at the Ministry of Agriculture in October and November.

Although covering almost all aspects of livestock production, probably the most important subject

This year four estates, Caymanas, Innswood, Worthy Park and Barnett, have used these forms for tabulating the required information. The different systems of current accounting on these individual estates have made it difficult to obtain a breakdown of the figures required, and it has been necessary to make allocations under a number of the headings for this year. However, it is proposed to carry out these costings annually and also to extend them to other

estates some of which are already costing on the Rees' system.

Because of the vast differences in conditions between estates, and the limited number participating in this survey this year, more stress has been laid upon comparative costings as efficiency factors, than has been laid upon absolute returns. The value of these costings lies primarily in management guidance in that Capital investment, Expenditure and Returns are readily related to one another in developing a clearer economic picture of the farming enterprise. From a study of these relationships, means of increasing the gross output and decreasing the expenditure per unit of output can be more readily determined.

The results of this first year's costings are being presented in one of our forthcoming livestock bulletins.

Breeding programmes

On most sugar estates the Brahman is the predominant breed, a legacy from the days when working oxen were used extensively. Though lacking in what is considered ideal beef conformation, the tropical hardiness and disease resistance of this breed are invaluable assets in the local environment.

As commercial beef production is our prime objective a programme of planned cross-breeding has been advocated on most estates. The programme is designed to combine the desirable hardiness of the Brahman with the improved beef characteristics of the European beef breeds in either one or two straight crosses. At the same time the benefits of hybrid vigour are obtained. The good results obtained in the Gulf Coast states and elsewhere in straight cross-breeding have largely guided us in planning this programme.

The flexibility of such a cross-breeding programme enables any of the temperate beef breeds to be used. In most cases it has been suggested that the Aberdeen Angus should be used for the first cross, and the relatively "new" breed, the Charollaise, used for the second cross. *All animals produced from this second cross are fattened for slaughter as are the male animals from the first cross.* Other combinations that are being tried involve the use of Red Poll and Devon breeds. Should these crosses prove successful it may be worthwhile considering other suitable beef breeds, such as the Hereford or Shorthorn, which have also been shown to do well in crossing of this sort.

One of the main problems encountered is that of acquiring suitable bulls of the temperate breeds. To use purebred stock involves importation from abroad, and the risks (which have lessened considerably in recent years) associated with acclimatization.

For these reasons it has been necessary to consider using high grade animals (for example, three-quarter breds) rather than pure-breds. It is too early to say whether this procedure will produce as good results as would the use of pure breds but the indications are that it should prove satisfactory.

The calves resulting from the use of the first imported Charollaise bulls appear very promising from both Brahman and Brangus cows.

The relative merits of the different crosses will be assessed primarily on weight-for-age and quality features. However, it will be a few years before sufficient numbers of animals are available from which to draw definite conclusions.

Breeding records

Few estates had satisfactory cattle records and even fewer were making any use of them. In all cases only breeding *not* production records were kept. Detailed breeding and production records of the pedigree herds, the source of the farm's future breeding material, are most important. Estates have therefore been encouraged to set up clear and accurately kept records for these herds. At the same time, this has necessitated organizing the breeding herds into one-bull units, with 30-40 cows to a bull. Proper selection based on accurate records of breeding and performance can then be practised.

A weekly return book setting out information required on births, sales, deaths, routing husbandry operations and including a livestock account table was printed and issued to some estates where organization was such that the returns could be readily completed. One copy of these returns (which are done in triplicate) is intended for return to the Livestock Division of the Research Department for transference of the information to a Central Recording system on punch cards.

The punch cards which were designed provide space for very comprehensive records of individual animals, their breeding, breeding performance, growth performance and certain management information. Their value will come in future years when regular analysis of the collected information can be made and used for guidance on breeding policy, methods of selection and some aspects of management.

In the case of the large commercial herds splitting the breeding herds up into small units is not essential as the offspring in these herds are mainly destined for slaughter. Any heifers retained for breeding, as in a triple cross programme, can be selected on their dams' breeding records and their own growth performance.

It is nevertheless important to gain an early appreciation of the worth of the individual bulls used on these commercial herds, so that undesirable animals can be discarded and replaced. The method that has been suggested for this is to breed all young bulls destined for the commercial herds—each to a small group of heifers (8 to 10) when the bulls are about 2 years old. Thus when 3 years old and ready for full work in the main herds each bull will have offspring some few months old on which an early assessment of performance can be made and the animal retained or discarded according to this.

Stock handling facilities

The lack of suitable handling facilities on most estates has caused unnecessary hardships to stock and men when stock were to be treated, branded, vaccinated, etc. With labour costs constantly rising and improved management necessitating more stock handling, the need for better handling facilities has become essential in most pens.

On several estates designs for new crush pens or for modifications of existing pen facilities were made and in most cases these improvements have now been completed. The time saving effected by these improved facilities has been remarkable and has benefited both the stock and the men handling them. Stock manipulations that previously took almost a whole day and occupied several men can now be completed in a fraction of the time with less men. By regular handling, the fractious nature of the animals is being greatly reduced and in time the need to use cattle whips will largely be eliminated.

On some larger estates cattle spray races have been erected to replace the old type of cattle dips. The installation of suitable scales for weighing stock has been regarded as an essential step, if any production records are to be kept. Nearly all the larger herds now possess a scale.

The high costs of permanent fencing has necessitated consideration being given to other means of increasing the sub-division of pastures required for better control of grazing. Electric fencing had already been used on a limited scale on some estates where working stock were folded on freshly cut cane fields. Trials with electric fencing with the Brahman and Brahman cross steers and heifers demonstrated that it could be used quite effectively with these animals. It was necessary, however, to train the stock to this type of fencing and breakdowns in the first two or three weeks of its use were to be expected. More important perhaps is the training of the local labour to handle the fences correctly to ensure proper maintenance and long life.

Several units have now been purchased and a combination of well planned main permanent fences with the efficient use of electric fencing should effect savings in fencing costs and a marked increase in grazing efficiency and improved pasture management generally.

The flexibility of pasture division that is obtained by use of non-permanent fencing of this type is an advantage when dealing with herds (breeding, steer gangs, heifers, etc.) that can vary considerably in size. With the need for more precise control of pasture growth the value of electric fencing should become more and more apparent.

Studies of the pre-weaning performance of beef calves

The objects of this study were:—

- (a) to follow the growth rate of a number of cattle from birth to butchering or to maturity and to endeavour to find out the time or times, if any, when growth rate is slowed and the reasons for this; and
- (b) to devise a method of correcting calf weights to a standardized (weaning) age, from weighings carried out within 1 month of that age, so that this corrected weight could then be used as one basis for selection of potential breeding stock. These "weaning weights" could also be related back to the sires and dams as a form of production testing.

These studies were carried out in a number of breeding herds on four estates—Caymanas, Innswood, Worthy Park and Barnett.

By periodic weighings of calves a series of weights for each calf were obtained. From these weighings three methods of calculating the 210-day weight were employed:—

- (i) graphically, by plotting weights against ages;
- (ii) by calculating the average gain per day and assuming a standard birth weight of 60 lb.;
- (iii) by use of regression of weight and age (using the average gains per day of all the calves in each herd).

Under practical farm conditions it is inconvenient to carry out a large series of weighings, and one weighing, or if convenient two weighings, within the age period of 6 to 8 months would be sufficient for deriving the 210-day figure, by either of methods (ii) and (iii). Where weighing facilities are available estates are being asked to adopt these weighings as routine.

Genetic factors known to affect the weaning weight of calves and which it was proposed to study were:—

- (i) the influence of the sire;
- (ii) the influence of the dam;
- (iii) the influence of heterosis;
- (iv) the influence of breed.

Due to the limited numbers involved so far in this year's studies it was impossible to draw definite conclusions on the influence of any of these factors.

Environmental factors could affect weaning weights and are numerous, the most important being those that influence nutrition.

An attempt was made to study the effect of the season or month of birth on weaning weights. Although the differences were not statistically significant, there was a tendency for calves born after the winter drought to wean 20 to 30 lb. heavier than calves born earlier. However, from the practical standpoint it might be preferable to sacrifice a little of this pre-weaning weight in order to be able to do the bulk of the weaning in the fall rather than early in the year (as would be necessary with May/June calves). This would ensure calves being weaned during a period of good pasture growth September/October rather than in the drought, it being evident that the biggest setback in growth of calves in Jamaica occurs just after weaning. This effect would tend to be exaggerated if calves were weaned at a time of poor feeding availability, nullifying any weaning weight advantage.

A study of the effect of branding and castrating calves at different ages suggested that:—

- (i) Branding before 4 to 5 months of age caused some setback in growth rate. The hide of the younger animals also did not appear to take the brand as well as that of older calves.
- (ii) Early castration caused no obvious setback in growth.

It is proposed, therefore for convenience of management, branding and castrating of calves should be

performed at around 6 months of age when calves could be weighed at the same time for 210-day weight determinations.

Early "worming" of calf studied in Brahman calves only, did not demonstrate any advantage in "worming" prior to weaning. In fact in animals younger than 6 months there was a tendency to depress growth. Whether these findings are true for other breeds and cross breeds will be the subject of further study.

The number of calves that could conveniently be studied in 1958 was only large enough to suggest trends rather than to formulate conclusions. However, with the improved handling facilities now available on some estates it will be possible to obtain measurements on considerably larger numbers of animals in 1959 and the results should be of more reliable analytical value.

Hormone implants for fattening stock

Three small trials on the use of synthetic hormone implants for fattening stock were carried out, one at Caymanas and two at Trelawny Estates.

Caymanas trial

Neither in the control nor in the treated groups were satisfactory weight gains obtained during the 5-month period, and no significant differences between groups were found.

Trelawny trials

(i) In the first trial involving *five* control and *five* treated animals the average difference in weight gain over the 6-month period was 75 lb. liveweight per head in favour of the treated animals.

On the deadweight basis the average difference in weight gains was 39 lb. per head. With the cost of the implant at 18s. 6d. the net gain ascribed to the implant was 65s. per head at current prime beef prices.

There was actually a loss in weight in the treated group during the first month after implantation but this was considered to be due to the very poor feed conditions occasioned by drought at that time. Delay due to the "Pinkeye" restrictions prevented slaughter at the recommended time, 5 months after treatment, and the extra month's delay may have affected the results somewhat.

(ii) In the second trial conducted on a larger scale with ten treated animals a misunderstanding in connection with the "Pinkeye" regulations resulted in some of the animals in the trial being slaughtered before its completion. This trial was therefore abandoned.

The encouraging results obtained from the first trial at Trelawny Estates suggested that further trials on a larger scale would be worthwhile and such trials are to be conducted in 1959.

Fertilizer trials

Fertilizer trials were laid out on seven estates, six on pangola grass and one on Guinea grass.

The trials were $3 \times 3 \times 3$ factorial with 1/40th acre plots using sulphate of ammonia, superphosphate 40% and muriate of potash. Plots were reaped when the

grass in the most forward plots was considered at an optimum stage for grazing. Yields were determined in terms of wet green material and of total dry matter. Samples were analyzed for protein, fibre, phosphate and potash. After sampling all plots were grazed down as low as possible in a matter of two days or so by groups of steers, thus a normal return of dung and urine was put on the plots. As plots were not fenced off individually the effect of this was to even out the distribution of nutrients (returned by the animals) to the different plots. This was one of the reasons for discontinuing these trials in their original form after two or three samplings. It was also felt that trials of this sort might be better discarded in favour of larger production trials which would yield more information on actual returns in terms of livestock output under practical farm conditions. Nevertheless, the information from the smaller trials will be used as a guide in the larger production trials.

The results of this year's trials showed the following:—

- (i) In all cases there were significant increases in yield (in terms of dry matter) in response to nitrogen application.
- (ii) Whereas nitrogen increased the yield on both a wet and a dry matter basis the percentage dry matter tended to be decreased. The degree of increase in dry matter was not therefore in the same proportion as the increase in wet matter.
- (iii) Crude protein content of the grass was significantly increased by nitrogen, though the percentage of crude protein at the times the grass was sampled only reached a maximum of between 12 and 13% on a dry matter basis—on some estates the figure was not even as high as this. The % protein in pasture is a measure of its quality as a feed, the ability of the animal to convert the grass into meat being largely dependent on this. The improvement in quality (% protein) obtained from the use of fertilizers can therefore be as important as the increase in actual herbage yield. For pasture to support good growth in cattle the protein percentage of the herbage should be maintained above the 10% level. The protein figures of the grass sampled were therefore rather disappointing.
- (iv) Significant yield response to phosphate was obtained on two estates—Sevens (Curatloe Hill) and Hampden (Phoenix).
- (v) There was a significant increase in the phosphate content of the herbage following the application of superphosphate. In most cases the percentage phosphate of the dry matter from the plots not receiving phosphate showed figures that were well below what are generally considered the optimum requirements for cattle. In this connection it is important to consider whether it is more economical to provide for the deficiencies in nutritional phosphate through mineral supplements or

through application of fertilizer phosphate to pasture. This will largely be governed by the dry matter yield response obtainable from the fertilizer method.

- (vi) Significant response in yield with potash only occurred on one estate, Long Pond (Etingdon).
- (vii) Assuming that a yearling steer will consume 22 lb. of dry matter per day and gain at the rate of 1 lb. per day, it was estimated that in the first grazing (4 to 6 weeks after fertilization) the increases in yield per acre in response to the fertilizer applications on the basis of liveweight increase (value) equivalent, in most cases, equalled the cost of the fertilizer applied. As the response was sustained, though to a smaller degree, for a further varying period the total yield response would easily cover the fertilizer costs at the rates applied. (Rates varied up to the equivalents of 2 cwt. sulphate of ammonia, 2 cwt. 40% superphosphate and 1 cwt. muriate of potash per acre per application).
- (viii) Though the effect of phosphate application appears to be maintained for quite long periods the effect of a single application of nitrogen, even at the higher rate, soon diminished and and 8 to 9 weeks after application was almost completely lost. Rainfall conditions will undoubtedly have a considerable influence on the length of this period.

It appears likely that more benefit will be derived from fairly frequent small applications of nitrogen than by large applications at long intervals, even though labour costs would increase somewhat.

The timing of fertilizer applications in relation to both the growth cycle of the grass and to rainfall is likely to be most important, and it is hoped that this question can be studied in the near future.

In nearly all cases the soils which constitute estates' grassland are of very poor quality, all the better lands being taken up in cane or bananas. It is to be expected therefore that relatively high fertilization rates will be necessary initially in these areas until the fertility of the soil is built up both by sound management and use of fertilizers.

Store cattle trial

Prompted by the widely held belief that cattle in Jamaica fatten better on coastal lowlands whereas the upland environment is more favourable for breeding and rearing young stock, a trial was started to study this possibility.

Three evenly matched groups of steers bred at Worthy Park were selected. Two groups have been trucked down to Caymanas Estate and one group retained at Worthy Park. As far as is practical the three groups are being managed along similar lines and are provided with similar grazing. Weighings are being made every two months. The trial is still continuing and will be evaluated after the completion of one year.

Intransit losses of the steers trucked to Caymanas, a distance of some 30 miles, averaged approximately 55 lb. per head. It took nearly two months for this loss to be recovered.

Flood rains in October followed by an attack of caterpillars caused considerable damage to the Caymanas pastures and necessitated the steers being removed to hill grazings. At this time for a period of nearly two months a very reduced growth rate occurred, but this has since improved with the recovery of the pastures and the transference of steers back to the lowland grazings.

By-product feeds

With a view to exploring the possibilities of utilizing cheap locally produced by-products for stock feed a small feeding trial has been planned to start early in 1959.

Economic considerations have in the past discouraged any extensive use of concentrate feeding for beef. Although it appears likely that the cost of feed in relation to the price paid for beef will still be unfavourable, preliminary trials were considered worthwhile in anticipation of some improvement in beef prices in the future and/or lower costs for concentrates.

The success with which by-product derived feeds are being used elsewhere particularly in the United States, and the desirability of some form of supplemental or pen feeding, to relieve the pressure on pastures during drought periods, together with the ample availability of suitable byproducts locally, are factors which favour investigation in this field.

The Jamaica Citrus Growers Limited, Bog Walk, have kindly offered to compound the feeds and to supply part of the ingredients. United Estates, apart from providing certain feed ingredients have given pasture and "pen" facilities for the trial. They are also making a number of young beef steers available.

Tuberculin testing

Bovine tuberculosis has a very low incidence in Jamaica, probably of the order of 1% or less. However, information collected some years ago by the Department of Agriculture indicated a high proportion of infected animals were working steers on sugar estates and other large properties. It appeared desirable therefore to attempt eradication whilst the incidence was low and before any possible spread of the disease occurred through more intensive management and high pasture stocking rates.

Lack of suitable handling facilities on a few estates has prevented completion of the testing programme which will be continued in 1959. On only four of the estates so far tested have any reactors been found. Testing and slaughter of reactors in these herds will be continued until no more reactors are found. On four estates no reactors were found and annual testing will be confined only to dairy animals in these cases. This is required by Ministry of Health Regulations.

Tick fever problem in imported stock

The high mortality rate due to tick fevers that occurred in the past in imported cattle, mainly stud

bulls, has been greatly reduced in recent years by the use of new drugs. However, there is still considerable risk of stock succumbing to either of the tick fevers soon after importation.

A small consignment of bulls from Florida to Worthy Park permitted observations to be made on some of the more recent methods of overcoming this problem.

Anaplasmosis Complement-fixation tests were performed on the animals before leaving America. Three showed positive titres which indicated that they possessed some degree of resistance or immunity, the other two were negative suggesting that they might be more susceptible.

One positive and one negative animal were each inoculated with 10 c.c. of blood from a carrier animal in order to try and induce infection during a known period and thus produce a premunity (resistant state) as soon as possible with or without treatment.

Close observations on these bulls over the next few months with frequent microscopical examination of blood films tended to indicate that:—

- (i) The animals showing positive titres to the complement fixation test for Anaplasmosis suffered less from clinical and subclinical Anaplasmosis than did the negative titre animals.
- (ii) Inoculation with carrier (infected) blood at a known time immediately on arrival in Jamaica permitted better observation and earlier diagnosis of infection due to both piroplasmosis and anaplasmosis, both of which appeared after definite incubation periods.
- (iii) The new drug "Ganaseg" appeared to be more satisfactory than the old established organic urea derivatives in the treatment of piroplasmosis.

Livestock Bulletins

During the year seven livestock bulletins were issued. These discussed various topics considered as having an application to livestock production, locally and were intended to promote interest in the numerous aspects of management, breeding, nutrition and economics concerned in cattle farming in Jamaica. In this way also reports will be made in future on any studies that have been completed as in the case of the January (1959) bulletin which deals with preliminary studies on the pre-weaning performance and management of beef calves.

Subjects discussed in the various bulletins were as follows:—

January	Records, Breeding and Crossbreeding.
February	Breeding Herd Management.
April	Fixed Equipment on the Beef Farm.
June	Some Economics in the Beef Industry. (This dealt mainly with market prices of beef locally).
July	Some Notes on Grassland Management.
September	Summary of relevant discussions at the Fourth F.A.O. meeting on Livestock Production.
November	Notes on Selecting Beef Cattle.

L. ACKNOWLEDGEMENTS

The keen manner in which all estates' personnel helped with the laying out and reaping of experiments is gratefully acknowledged, as is the co-operation which was so freely given by the Research Officers of Bernard Lodge, Frome, Jamaica Sugar Estates, Monymusk, Vale Royal and Worthy Park.

APPENDIX I

CANE YIELD SURVEY

TABLE I
ISLAND CANE CROP FOR PAST TEN YEARS

Crop year	CANE GROUND						
	Total tonnage	% increase or decrease on previous crop	Tons purchased	% increase or decrease on previous crop	Tons estates	% increase or decrease on previous crop	Purchased cane % total
1949	2,212,220	17.5	637,346	22.9	1,574,874	15.5	29
1950	2,474,754	11.9	764,054	19.9	1,710,700	8.6	31
1951	2,425,748	— 2.0	765,814	0.2	1,659,934	— 3.0	32
1952	2,468,902	1.8	819,371	0.7	1,649,531	— 0.6	33
1953	3,133,752	26.9	1,175,056	43.4	1,958,706	18.7	37
1954	3,503,788	11.8	1,380,096	17.5	2,123,692	8.4	39
1955	3,564,881	1.7	1,383,855	0.3	2,181,026	2.7	39
1956	3,219,977	— 9.7	1,209,410	— 12.6	2,010,567	— 7.8	38
1957	3,394,278	5.4	1,297,132	7.3	2,097,146	4.3	38
1958	3,237,218	— 4.6	1,253,044	— 3.4	1,984,174	— 5.4	39

In the above table the tonnages are for cane actually ground in the factories. They include cane, the juice from which was sent direct to the distilleries for rum manufacture.

TABLE II
ACREAGE REAPED BY EACH ESTATE CROPS 1949-1958

Estates	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Appleton	1338	1301	1217	1538	1538	2029	2243	2263	2483	2507
Barnett	781	791	852	786	817	834	944	954	973	973
Bernard Lodge	4214	4358	4780	5061	4678	4925	4127	3733	3820	4080
Caymanas	2565	2597	2720	2879	2835	2963	2905	2513	2722	2405
Frome	7268	7971	8687	8975	9774	10100	10177	10205	10732	11017
Gray's Inn	1802	1934	1873	1903	1958	1944	2013	1929	1954	1919
Green Park	453	—	—	333	500	—	—	—	—	—
Hampden	1616	1666	1706	1847	2112	2443	2678	2538	2462	2570
Holland	607	741	826	896	1018	1108	1223	1228	1296	1219
Innswood	1874	1894	2065	2208	1809	2168	1940	2219	2059	1866
Ironshore	688	744	752	—	—	—	—	—	—	—
Jamaica Sugar Estates	2544	2976	2884	2914	2938	3137	3177	3078	2954	3205
Long Pond	1617	1722	1842	1824	1803	1846	1836	1783	1647	1802
Monymusk	8676	11356	11996	12730	12963	13665	14590	13375	12821	13359
New Yarmouth	2464	2886	3347	3732	3584	3747	3504	3618	3433	3506
Richmond/Llandoverly	1230	1322	1497	1429	1461	1482	1505	1529	1569	1603
Rose Hall	1110	1114	1152	1190	1231	1291	1335	1486	1314	1306
Serge Island	1125	1182	1228	1211	1288	1347	1339	1531	1370	1682
Sevens	1483	1635	1584	1851	2095	2107	1942	1834	1915	1993
United Estates	1411	1395	1597	1926	1747	1948	1925	1823	2156	2411
Vale Royal	1650	1635	1766	1769	1977	2126	2162	2176	2180	2279
Worthy Park	1218	1223	1146	1161	1195	1273	1276	1277	1202	1346
Total	48214	52343	55517	58213	59317	62496	62841	61092	61159	63048

* Kew 480

* Kew operating as cane farmers

TABLE III
TONS CANE PER ACRE BY ESTATES FOR CROPS 1949-1958 ALSO TEN YEAR AVERAGE

Year	Apple- ton	Barnett	Bernard Lodge	Caymanas	Frome	Gray's Inn Cent.	Green Park	Hampden	Holland	Innswood	Jamaica Sugar Estates	Long Pond
1949	22.0	28.6	32.4	32.3	37.3	36.3	13.0	19.6	29.5	34.1	45.3	16.9
1950	26.5	34.8	39.1	37.9	34.5	29.8	—	21.3	31.5	34.0	33.6	20.7
1951	23.8	30.5	35.6	34.1	30.6	27.6	—	26.1	25.8	32.2	35.9	20.3
1952	15.9	29.4	28.5	31.5	30.3	30.8	16.2	20.3	20.1	28.2	33.8	17.2
1953	26.1	32.7	29.7	35.2	35.3	31.3	15.5	25.5	30.2	35.0	39.9	25.3
1954	34.3	35.4	31.0	41.7	35.8	32.8	—	23.1	30.9	33.5	36.2	21.3
1955	23.6	32.1	35.1	41.3	29.8	29.4	—	27.8	28.5	37.5	36.1	31.7
1956	28.6	28.0	29.3	39.9	30.5	32.7	—	21.1	23.0	32.5	33.4	27.2
1957	29.2	29.2	33.6	39.5	38.3	29.1	—	25.9	28.6	34.7	37.1	30.0
1958	30.1	28.1	30.2	39.5	31.4	26.6	—	23.0	26.7	32.0	37.3	27.1
10 year average }	26.7	30.8	32.4	37.3	33.3	30.6	14.8	23.6	27.7	33.3	36.6	23.8

Year	Monymusk	New Yarmouth	Richmond/ Llandovery	Rose Hall	Serge Island	Sevens	United Estates	Vale Royal	Worthy Park	Island average	Total acres
1949	40.8	33.6	32.0	21.4	32.2	33.7	25.0	19.2	27.6	32.7	48,211
1950	35.4	35.0	29.5	21.7	28.2	35.9	28.3	21.4	31.9	32.6	52,340
1951	30.9	34.3	23.9	21.2	26.0	33.1	26.1	22.5	22.8	29.9	55,515
1952	30.2	31.3	20.3	20.9	24.2	30.1	23.5	25.0	23.0	28.3	58,212
1953	36.9	34.2	24.8	18.4	31.7	37.2	31.0	28.0	35.5	33.0	59,316
1954	37.1	35.4	36.1	23.4	31.4	35.1	33.5	24.5	37.4	34.0	62,494
1955	41.0	36.7	33.4	23.9	36.5	40.7	31.2	34.5	36.6	34.8	62,840
1956	39.3	36.9	31.7	24.8	27.9	36.7	35.0	32.0	36.0	33.0	61,089
1957	38.0	32.4	30.4	24.0	27.4	35.0	37.5	25.6	37.1	34.3	61,139
1958	33.7	34.8	36.2	20.9	28.8	29.3	35.0	25.4	32.8	31.5	63,045
10 year average }	36.3	34.5	30.8	22.2	29.4	34.7	31.1	26.2	32.2	32.4	—

TABLE IV
TONS CANE PER TON THEORETICAL 96° SUGAR BY ESTATES FOR 1954-1958

Estates	1954	1955	1956	1957	1958
Appleton	9.26	7.88	7.86	8.41	8.13
Barnett	8.70	8.08	7.73	7.90	7.69
Bernard Lodge	8.37	7.98	7.83	7.84	8.40
Caymanas	8.87	8.31	8.48	8.71	10.22
Frome	9.44	7.89	8.12	9.10	8.39
Gray's Inn Central	10.63	9.68	9.68	9.08	11.88
Hampden	9.28	8.34	7.71	8.12	8.72
Holland	10.09	8.10	9.00	8.32	8.71
Innswood	9.34	8.12	8.66	8.35	9.40
Jamaica Sugar Estates	9.35	8.20	8.63	8.60	9.42
Long Pond	9.55	8.89	8.80	8.87	9.40
Monymusk	8.96	9.17	9.08	9.53	9.91
New Yarmouth	8.88	8.40	8.38	8.95	9.23
Richmond/Llandovery	9.06	8.73	8.52	8.41	10.65
Rose Hall	8.22	8.28	7.98	8.56	8.50
Serge Island	8.46	7.59	7.94	7.86	7.85
Sevens	8.69	8.67	8.70	8.57	9.51
United Estates	8.57	7.80	7.84	8.01	8.05
Vale Royal	9.13	8.62	8.42	8.50	9.02
Worthy Park	7.59	7.01	7.22	7.05	7.32
Average	9.03	8.43	8.46	8.75	9.05

Figures quoted are theoretical—based on 100 B.H.E. and 97% Pol Extraction.

TABLE V
TONS THEORETICAL 96° SUGAR PER ACRE BY ESTATES FOR 1954-1958

Estates	1954 (theoretical)	1955 (theoretical)	1956 (theoretical)	1957 (theoretical)	1958 (theoretical)
Appleton	3.70	3.00	3.64	3.47	3.71
Barnett	4.07	3.97	3.62	3.70	3.65
Bernard Lodge	3.70	4.40	3.74	4.29	3.60
Caymanas	4.70	4.97	4.70	4.54	3.87
Frome	3.79	3.78	3.75	4.21	3.74
Gray's Inn Central	3.09	3.03	3.38	3.20	2.24
Hampden	2.49	3.33	2.73	3.19	2.64
Holland	3.95	3.52	2.56	3.44	3.06
Innswood	3.58	4.62	3.75	4.16	3.41
Jamaica Sugar Estates	3.88	4.41	3.88	4.11	3.96
Long Pond	2.23	3.57	3.09	3.38	2.88
Monymusk	4.14	4.47	4.32	3.99	3.41
New Yarmouth	3.98	4.37	4.40	3.62	3.77
Richmond/Llandoverly	3.98	3.82	3.72	3.61	3.40
Rose Hall	2.85	2.88	3.11	2.80	2.46
Serge Island	3.71	4.81	3.52	3.49	3.67
Sevens	4.04	4.69	4.22	4.08	3.08
United Estates	3.91	3.97	4.46	4.68	4.35
Vale Royal	2.68	4.00	3.80	3.01	2.81
Worthy Park	4.93	5.22	4.98	5.27	4.48
Average	3.76	4.12	3.90	3.92	3.48

TABLE VI
CWTs. THEORETICAL 96° SUGAR PER ACRE PER MONTH BY ESTATES FOR 1954-1958

Estates	1954	1955	1956	1957	1958
Appleton.. .. .	5.28 (87)	5.49 (92)	6.26 (98)	5.06 (92)	5.55 (96)
Barnett	6.19 (102)	6.42 (100)	6.11 (93)	6.06 (93)	6.05 (99)
Bernard Lodge	5.91 (91)	6.43 (94)	6.81 (98)	6.41 (101)	5.78 (104)
Caymanas	6.98 (103)	7.63 (112)	7.48 (108)	6.90 (109)	5.87 (106)
Frome	6.23 (103)	6.09 (102)	6.85 (105)	6.73 (104)	6.38 (105)
Gray's Inn Central	5.28 (87)	4.87 (82)	5.63 (93)	5.04 (82)	3.86 (71)
Hampden	3.67 (90)	4.83 (92)	4.36 (83)	5.03 (97)	4.08 (90)
Holland	6.30 (104)	4.77 (80)	4.76 (73)	5.70 (88)	4.91 (81)
Innswood	5.67 (87)	6.26 (92)	6.04 (87)	5.09 (85)	5.29 (96)
Jamaica Sugar Estates.. .. .	6.30 (104)	6.91 (116)	6.51 (108)	7.10 (116)	6.03 (111)
Long Pond	4.02 (99)	5.38 (103)	5.47 (104)	5.64 (107)	5.00 (111)
Monymusk	6.73 (103)	7.22 (106)	7.09 (102)	6.20 (100)	6.04 (109)
New Yarmouth	6.48 (99)	6.43 (94)	6.55 (99)	5.81 (92)	6.14 (111)
Richmond/Llandoverly	5.93 (98)	6.21 (104)	6.15 (102)	6.06 (98)	5.50 (101)
Rose Hall	4.75 (116)	4.76 (91)	5.22 (99)	4.70 (91)	4.47 (99)
Serge Island	5.89 (98)	6.34 (106)	5.52 (91)	6.13 (99)	5.93 (109)
Sevens	7.07 (108)	7.28 (107)	7.12 (103)	6.81 (108)	5.64 (102)
United Estates	5.88 (97)	6.79 (114)	7.22 (93)	7.20 (95)	7.40 (96)
Vale Royal	4.34 (106)	6.19 (118)	6.26 (119)	5.28 (102)	4.68 (101)
Worthy Park	8.27 (137)	8.67 (145)	8.65 (111)	8.81 (109)	8.83 (108)
Average	6.03	6.42	6.54	6.28	5.81

Bold figures in brackets = cwt. theoretical sugar per acre per month expressed as a percentage of the island average in the same year.

Light figures in brackets = cwt. theoretical sugar per acre per month expressed as a percentage of the average for the ecological area in the same year.

TABLE VII
TOTAL ACREAGE UNDER VARIETY % TOTAL ACREAGE REAPED BY AND ECOLOGICAL GROUPS FOR 1954-1958

Estates	B3439						B34104						B37161						B37172						B41227					
	54	55	56	57	58		54	55	56	57	58		54	55	56	57	58		54	55	56	57	58		54	55	56	57	58	
Appleton ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Barnett ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Frome ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Holland ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Wet West Estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Hampden ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Long Pond ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Rose Hall ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Vale Royal ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Dry North Coast ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Bernard Lodge ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Caymanas ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Innswood ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Longwood ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
New Yarmouth ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Sevens ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Irrigated Estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Gray's Inn Central ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Jamaica Sugar Estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Richmond/Llandovery ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Serge Island ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Wet East Estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
United Estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Worthy Park ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Central Estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Overall Average ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

TABLE VII—continued

Estate	B4231						B4382						C0331						C0421						Others					
	54	55	56	57	58		54	55	56	57	58		54	55	56	57	58		54	55	56	57	58		54	55	56	57	58	
Appleton	—	—	—	—	—	—	1	5	11	18	26	—	—	—	—	—	—	—	—	—	—	—	—	—	13	13	7	11	8	
Barnett	—	—	—	—	—	—	5	6	11	33	37	—	—	—	—	—	—	—	—	—	—	—	—	—	5	8	13	13	12	
Barnett	—	—	—	—	—	—	17	20	26	30	39	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1	1	1	1	
Barnett	—	—	—	—	—	—	10	15	22	27	39	—	—	—	—	—	—	—	—	—	—	—	—	—	32	33	33	32	34	
Holland	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Wet West Estates	1	2	2	2	2	2	14	16	22	28	37	—	—	—	—	—	—	—	—	—	—	—	—	—	6	9	6	6	5	
Hampden	—	—	—	—	—	—	9	13	14	19	25	—	—	—	—	—	—	—	—	—	—	—	—	—	59	54	54	49	45	
Long Pond	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35	33	33	24	23	
Rose Hill	—	—	—	—	—	—	1	3	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	14	21	32	32	18	
Vale Royal	1	2	2	3	4	—	6	9	12	12	13	—	15	19	22	20	33	—	21	20	17	18	9	—	20	19	18	21	12	
Dry North Coast	—	1	1	2	2	2	5	7	9	10	14	—	4	6	9	10	18	—	7	9	10	10	7	—	56	35	32	32	26	
Bernard Lodge	7	16	24	33	43	—	13	21	23	25	26	—	—	—	—	—	—	—	—	—	—	—	—	—	5	5	4	4	3	
Caymanas	8	17	28	38	39	—	14	20	25	25	28	—	—	—	—	—	—	—	—	—	—	—	—	—	24	18	7	6	6	
Imuswood	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18	16	10	10	7	
Manus	23	25	27	18	14	—	6	9	11	8	10	—	—	—	—	—	—	—	—	—	—	—	—	—	12	6	8	7	6	
New York	6	13	27	35	44	—	3	6	7	9	12	—	—	—	—	—	—	—	—	—	—	—	—	—	6	12	8	12	10	
Sevens	—	—	—	—	—	—	9	26	30	33	30	—	—	—	—	—	—	—	—	—	—	—	—	—	10	8	6	7	4	
Irrigated Estates	13	18	21	22	23	—	7	12	14	14	15	—	—	—	—	—	—	—	—	—	—	—	—	—	12	9	7	6	6	
Gray's Inn Central	—	—	—	—	—	—	14	25	28	33	41	—	—	—	—	—	—	—	—	—	—	—	—	—	17	17	17	14	15	
Jamaica Sugar Estates	—	—	—	—	—	—	15	20	23	23	28	—	—	—	—	—	—	—	—	—	—	—	—	—	8	9	6	7	12	
Rebecca's Handover	—	—	—	—	—	—	4	10	14	23	31	—	—	—	—	—	—	—	—	—	—	—	—	—	18	16	14	13	13	
Serge Island	—	—	—	—	—	—	3	8	23	28	47	—	—	—	—	—	—	—	—	—	—	—	—	—	6	4	5	9	8	
Wet East Estates	—	—	—	—	—	—	11	17	24	29	35	—	—	—	—	—	—	—	—	—	—	—	—	—	12	11	11	11	12	
United Estates	4	6	7	7	8	—	9	25	42	44	55	—	—	—	—	—	—	—	—	—	—	—	—	—	18	14	14	19	10	
Worthy Park	9	9	5	1	—	—	44	43	51	57	51	—	—	—	—	—	—	—	—	—	—	—	—	—	21	18	16	15	13	
Central Estates	6	7	6	5	5	—	23	34	46	49	54	—	—	—	—	—	—	—	—	—	—	—	—	—	19	16	14	13	11	
Overall Average	7	9	10	11	11	—	10	14	18	21	25	—	—	1	2	2	2	—	1	1	1	1	1	—	14	13	11	9	9	

TABLE VIII

PLANT ACREAGE UNDER VARIETY % TOTAL PLANT ACREAGE REAPED BY ESTATES AND ECOLOGICAL GROUPS FOR 1954-1958

Estates	B3439					B37161					B37172					B41227				
	54	55	56	57	58	54	55	56	57	58	54	55	56	57	58	54	55	56	57	58
Appleton	—	—	—	—	—	7	3	—	—	—	41	—	2	5	1	33	56	56	20	19
Barnett	16	—	—	—	—	37	43	4	—	—	7	—	—	—	—	4	14	35	21	32
Frome	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	46	76	62	52	48
Holland	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43	20	22	—
Wet West Estates	2	—	—	—	—	8	3	—	—	—	17	—	—	1	—	34	66	59	41	39
Hampden	2	2	—	—	—	24	19	8	6	8	—	—	—	—	—	1	2	6	10	13
Long Pond	6	2	—	—	—	17	20	2	18	12	—	—	1	—	—	—	—	—	—	—
Rose Hall	35	20	6	—	—	27	16	17	—	3	—	—	—	—	—	2	21	44	100	76
Vale Royal	—	—	—	—	—	20	11	—	—	3	—	—	—	—	—	2	12	18	10	6
Dry North Coast	9	6	2	—	—	22	17	8	8	7	—	—	—	—	—	1	9	22	28	18
Bernard Lodge	7	—	—	—	—	14	—	—	—	—	—	—	—	—	—	15	21	7	17	—
Caymanas	21	11	13	3	—	6	—	—	—	—	3	—	—	—	—	—	1	15	10	15
Innswood	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	52	100	79	86
Monynusk	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	49	87	60	32	69
New Yarmouth	24	5	—	3	16	4	2	2	—	—	—	—	—	—	—	42	17	10	10	16
Sevens	8	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16	22	60	88
Irrigated Estates	8	2	1	1	2	4	—	—	—	—	—	—	—	—	—	34	48	41	51	54
Gray's Inn Central	10	—	3	9	8	—	—	—	—	—	—	13	18	8	49	—	—	—	—	—
Jamaica Sugar Estates ..	—	—	—	—	—	—	—	—	—	—	3	31	52	88	43	—	—	—	—	—
Richmond/Llandovery ..	32	13	—	—	—	25	18	1	—	—	—	—	—	—	—	14	21	52	57	51
Serge Island	20	10	—	—	—	1	—	—	—	—	65	66	27	47	8	1	2	—	6	11
Wet East Estates	16	7	—	3	1	9	5	—	—	—	18	16	28	23	22	5	6	12	24	16
United Estates	3	—	—	—	—	—	5	—	—	—	4	—	—	—	—	33	5	14	40	24
Worthy Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	55	—	25	84
Central Estates	2	—	—	—	—	—	3	—	—	—	3	—	—	—	—	29	23	10	37	38
Overall Average	8	2	1	1	1	7	3	1	1	1	5	1	3	3	3	26	43	39	42	38

TABLE VIII—continued

Estates	B42231					B4362					C0331					Others				
	54	55	56	57	58	54	55	56	57	58	54	55	56	57	58	54	55	56	57	58
Appleton	—	—	—	—	3	3	20	21	47	77	—	6	10	—	—	15	15	11	28	—
Barnett	—	—	—	—	—	20	7	44	79	67	—	—	—	—	—	18	36	17	—	1
Frome	8	4	5	2	1	43	20	33	44	50	—	—	—	—	—	—	—	2	1	—
Holland	—	—	—	—	—	65	48	80	60	52	—	—	—	—	—	34	9	—	18	48
Wet West Estates	4	3	4	2	1	26	21	33	48	55	—	1	2	—	—	9	6	2	8	5
Hampden	—	—	4	—	—	22	30	24	54	38	2	11	2	14	13	49	36	56	16	28
Long Pond	—	7	—	9	5	—	—	6	4	6	1	13	33	49	43	76	58	49	7	16
Rose Hall	—	—	—	—	—	3	3	—	—	—	—	3	19	—	9	35	38	14	—	12
Vale Royal	3	12	9	30	6	22	12	46	33	31	28	21	10	—	44	25	26	17	27	10
Dry North Coast	1	4	3	6	3	14	13	19	25	24	9	11	24	22	31	40	29	22	11	17
Bernard Lodge	24	41	75	65	73	34	38	13	18	27	—	—	—	—	—	7	—	5	—	—
Caymanas	25	42	58	51	44	34	26	5	32	41	—	1	3	—	—	11	19	6	4	—
Innswood	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	91	48	—	19	14
Monynusk	34	18	20	11	10	12	12	10	—	13	—	—	—	—	—	3	2	10	7	8
New Yarmouth	12	31	68	63	40	10	17	10	7	16	—	—	—	—	—	8	28	10	17	12
Sevens	—	—	35	5	—	79	80	25	24	3	—	—	—	—	5	13	2	18	1	9
Irrigated Estates	26	23	34	31	20	19	21	10	11	15	—	—	—	—	—	8	6	14	6	9
Gray's Inn Central	—	—	15	5	18	75	70	84	60	14	—	—	—	—	—	15	17	—	18	11
Jamaica Sugar Estates ..	—	—	—	—	—	66	45	40	12	42	—	—	—	—	—	31	24	8	—	15
Richmond/Llandovery ..	—	—	1	3	1	13	34	36	28	37	—	—	3	—	—	16	14	7	12	11
Serge Island	—	—	—	—	—	3	20	73	47	67	—	—	—	—	—	10	8	—	—	14
Wet East Estates	—	—	3	3	3	35	49	55	37	45	—	—	—	—	—	17	17	2	10	13
United Estates	13	11	5	9	7	33	79	76	44	63	—	—	—	—	—	14	—	5	7	6
Worthy Park	68	—	33	—	—	32	33	64	17	12	—	—	—	—	—	—	12	3	58	4
Central Estates	20	7	13	7	5	33	62	72	39	51	—	—	—	—	—	13	5	5	17	6
Overall Average	15	14	18	16	10	23	24	27	27	33	—	2	3	2	4	16	11	8	8	10

TABLE IX

TONS CANE PER ACRE FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS, CROP 1958

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	C0331	C0421	Mixed and others	Average
Appleton	—	25.8	25.3	25.4	31.6	36.1	31.6	28.6	—	27.4	30.1
Barnett	18.8	—	21.6	21.9	33.0	—	33.4	—	—	24.0	28.1
Frome	21.9	24.0	22.9	—	30.6	31.2	33.9	—	10.9	28.6	31.4
Holland	20.4	21.7	—	—	25.7	—	28.6	—	—	27.4	26.7
Wet West Estates	19.4	23.5	22.6	25.1	30.8	31.3	33.1	28.6	10.9	27.0	30.6
Hampden	16.6	—	20.4	—	33.4	25.1	26.3	23.6	21.5	21.1	23.0
Long Pond	23.3	23.4	25.1	29.3	35.9	28.7	28.2	32.0	24.6	23.5	27.1
Rose Hall	20.5	15.9	19.1	—	23.3	—	21.5	20.8	—	19.7	20.9
Vale Royal	23.9	20.5	23.6	—	27.8	29.3	25.9	26.5	24.0	22.5	25.4
Dry North Coast	20.9	17.4	22.3	29.3	27.5	28.7	26.1	27.4	24.3	21.6	24.2
Bernard Lodge	28.3	28.6	23.5	—	25.8	33.0	29.5	—	—	28.3	30.2
Caymanas	19.1	—	39.0	—	41.2	38.2	41.3	38.0	25.2	40.7	39.5
Innswood	19.1	27.4	—	—	40.3	—	31.8	—	—	33.2	32.0
Monymusk	34.0	26.0	32.8	—	34.2	28.9	37.7	19.2	—	33.2	33.7
New Yarmouth	32.2	25.6	24.6	—	25.3	25.8	32.8	—	—	36.8	34.8
Sevens	25.6	—	—	—	32.1	29.9	29.0	17.0	—	21.5	29.3
Irrigated Estates	32.2	27.8	27.2	—	34.3	33.2	34.3	18.5	25.2	33.6	33.4
Gray's Inn Central	25.3	37.6	—	28.4	—	29.5	25.7	—	—	24.4	26.6
Jamaica Sugar Estates	—	—	—	38.9	—	—	35.1	—	—	34.1	37.3
Richmond/Llandovery	30.5	32.4	27.3	—	39.6	35.9	35.4	—	—	35.5	36.2
Serge Island	23.8	—	32.1	27.1	37.4	—	29.7	—	—	26.0	28.8
Wet East Estates	28.1	35.5	27.4	34.5	39.4	31.3	31.1	—	—	30.7	32.9
United Estates	24.8	30.5	21.4	—	33.7	37.3	36.2	—	—	32.5	35.0
Worthy Park	—	—	—	—	34.1	22.8	31.6	—	—	33.8	32.8
Central Estates	24.8	30.5	21.4	—	33.9	36.8	34.7	—	—	32.5	34.2
Overall Average	29.8	26.2	23.3	33.6	33.0	33.1	32.8	27.2	24.3	28.1	31.5

TABLE X

TONS CANE PER TON THEORETICAL 96° SUGAR FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS, 1958 CROP

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	C0331	C0421	Mixed and Others	Average
Appleton	—	8.52	7.97	8.04	8.25	8.37	7.90	9.05	—	8.14	8.13
Barnett	7.81	—	7.71	8.18	8.05	—	7.50	—	—	7.68	7.69
Frome	8.50	9.28	9.35	—	8.43	8.47	8.24	—	8.25	9.05	8.40
Holland	9.37	8.98	—	—	8.21	—	8.61	—	—	8.82	8.71
Wet West Estates	8.39	9.14	8.33	8.05	8.38	8.46	8.17	9.05	8.25	8.50	8.33
Hampden	8.08	—	8.75	—	9.27	8.54	8.48	9.01	8.97	8.76	8.72
Long Pond	9.51	8.42	9.08	9.72	9.30	9.31	9.41	10.05	9.32	9.12	9.41
Rose Hall	8.47	8.60	8.63	—	8.39	—	8.72	8.35	—	8.66	8.50
Vale Royal	8.63	8.47	8.94	—	9.12	8.84	8.65	9.40	8.85	8.81	9.02
Dry North Coast	8.57	8.55	8.89	9.72	8.84	8.97	8.57	9.51	9.13	8.83	8.94
Bernard Lodge	8.39	8.40	8.62	—	8.65	8.42	8.20	—	—	8.88	8.40
Caymanas	10.82	—	11.21	—	10.80	10.13	9.52	9.12	9.51	12.56	10.22
Innswood	12.88	9.77	—	—	9.10	—	8.45	—	—	8.80	9.40
Monymusk	8.98	9.01	12.07	—	10.07	9.43	9.52	10.12	—	9.88	9.91
New Yarmouth	9.55	10.01	9.19	—	9.60	8.93	8.33	—	—	10.00	9.23
Sevens	9.17	—	—	—	9.80	9.26	9.29	10.86	—	9.30	9.51
Irrigated Estates	9.70	9.31	9.66	—	9.93	9.09	9.09	10.46	9.51	9.95	9.55
Gray's Inn Central	11.91	12.40	—	11.95	—	11.67	12.00	—	—	11.36	11.88
Jamaica Sugar Estates	—	—	—	9.76	—	—	8.70	—	—	9.24	9.42
Richmond/Llandovery	9.71	10.88	9.32	—	11.09	10.24	10.36	—	—	11.02	10.55
Serge Island	7.62	—	8.02	7.81	8.66	—	7.72	—	—	8.32	7.85
Wet East Estates	10.36	11.78	9.24	9.65	10.76	11.17	9.27	—	—	9.93	9.68
United Estates	8.38	7.80	7.95	—	7.99	8.29	8.03	—	—	8.11	8.05
Worthy Park	—	—	—	—	7.71	6.98	7.03	—	—	7.38	7.32
Central Estates	8.38	7.80	7.95	—	7.86	8.26	7.69	—	—	7.77	7.78
Overall Average	9.61	9.26	8.86	9.52	9.27	9.05	8.53	9.51	9.14	9.22	9.05

TABLE XI

TONS THEORETICAL 96° SUGAR PER ACRE FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS, 1958 CROP

Estates	B3439	B34104	B37161	B37172	B41227	B42221	B4362	C0331	C0421	Mixed and Others	Average
Appleton	—	3.03	3.17	3.16	3.83	4.32	4.00	3.16	—	3.37	3.71
Barnett	2.41	—	2.80	2.68	4.09	—	4.45	—	—	3.13	3.65
Frome	2.57	2.58	2.45	—	3.63	3.68	4.11	—	1.32	3.16	3.74
Holland	2.17	2.42	—	—	3.13	—	3.32	—	—	3.10	3.06
Wet West Estates	2.31	2.56	2.71	3.12	3.67	3.70	4.05	3.16	1.32	3.18	3.68
Hampden	2.05	—	2.33	—	3.60	2.94	3.10	2.63	2.40	2.41	2.63
Long Pond	2.45	2.78	2.76	3.02	3.86	3.08	2.99	3.19	2.64	2.68	2.88
Rose Hall	2.42	1.85	2.21	—	2.78	—	2.46	2.49	—	2.28	2.46
Vale Royal	2.76	2.42	2.64	—	3.04	3.32	2.99	2.82	2.72	2.55	2.81
Dry North Coast	2.44	2.04	2.51	3.02	3.11	3.20	3.04	2.88	2.66	2.45	2.71
Bernard Lodge	3.37	3.41	2.72	—	2.99	3.92	3.60	—	—	3.18	3.60
Caymanas	3.62	—	3.48	—	3.82	3.77	4.34	4.17	2.65	3.24	3.87
Innswood	1.48	2.81	—	—	4.43	—	3.77	—	—	3.77	3.41
Monymusk	3.79	2.89	—	—	3.40	3.07	3.96	1.89	—	3.36	3.41
New Yarmouth	3.37	2.56	2.68	—	3.68	4.01	3.72	—	—	3.68	3.77
Sevens	2.79	—	—	—	3.28	3.23	3.12	1.56	—	2.31	3.08
Irrigated Estates	3.36	2.98	2.82	—	3.45	3.66	3.78	1.77	2.65	3.39	3.50
Gray's Inn Central	2.12	3.08	—	2.38	—	2.53	2.14	—	—	2.15	2.24
Jamaica Sugar Estates	—	—	—	3.99	—	—	4.04	—	—	3.69	3.96
Richmond/Landoverly	3.14	2.98	2.93	—	3.57	3.61	3.41	—	—	3.23	3.40
Serge Island	3.12	—	3.60	3.47	4.32	—	3.85	—	—	3.12	3.67
Wet East Estates	2.71	3.01	2.96	3.57	3.66	2.80	3.35	—	—	3.09	3.40
United Estates	2.96	3.91	2.68	—	4.32	4.50	4.51	—	—	4.01	4.35
Worthy Park	—	—	—	—	4.42	3.26	4.50	—	—	4.58	4.48
Central Estates	2.96	3.91	2.68	—	4.31	4.48	4.51	—	—	4.25	4.39
Overall Average	3.10	2.82	2.63	3.53	3.56	3.66	3.84	2.86	2.65	3.04	3.48

TABLE XII

CWT. THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR VARIETIES BY ESTATES AND ECOLOGICAL GROUPS, 1958 CROP

Estates	B3439	B34104	B37161	B37172	B41227	B42221	B4362	C0331	C0421	Mixed and Others	Average
Appleton	—	4.35	5.00	4.71	5.67	5.69	5.98	5.15	—	5.23	5.55
Barnett	4.28	—	4.89	4.09	6.23	—	7.57	—	—	4.78	6.05
Frome	4.68	5.06	5.29	—	6.16	6.48	6.83	—	3.64	5.77	6.38
Holland	3.62	3.74	—	—	4.98	—	5.32	—	—	5.09	4.91
Wet West Estates	4.01	4.57	5.04	4.66	6.06	6.44	6.64	5.15	3.64	5.13	6.09
Hampden	4.11	—	3.36	—	5.22	3.19	4.77	4.14	3.80	3.87	4.08
Long Pond	4.44	4.86	4.89	5.49	6.31	4.97	4.99	5.30	4.64	4.70	5.00
Rose Hall	4.43	3.40	4.18	—	4.98	—	4.49	4.39	—	4.13	4.47
Vale Royal	4.87	4.11	4.50	—	4.86	5.15	4.73	4.51	4.62	4.26	4.58
Dry North Coast	4.45	3.89	4.15	5.49	5.20	4.84	4.76	4.67	4.59	4.10	4.52
Bernard Lodge	5.60	5.49	4.69	—	4.88	6.10	5.87	—	—	5.26	5.76
Caymanas	5.73	—	5.53	—	5.81	5.75	6.36	6.81	4.46	4.95	5.87
Innswood	2.76	4.58	—	—	6.41	—	5.97	—	—	5.36	5.29
Monymusk	7.03	6.77	4.48	—	6.00	5.63	7.23	3.37	—	5.87	6.04
New Yarmouth	5.80	4.17	5.21	—	5.86	6.46	6.07	—	—	5.86	6.14
Sevens	5.34	—	—	—	5.89	6.30	5.98	2.50	—	4.14	5.64
Irrigated Estates	5.75	4.86	4.82	—	5.95	5.99	6.40	2.91	4.46	5.61	5.53
Gray's Inn Central	3.79	4.78	—	3.86	—	3.82	3.87	—	—	3.81	3.88
Jamaica Sugar Estates	—	—	—	6.13	—	—	6.11	—	—	5.41	6.03
Richmond/Landoverly	5.27	4.58	4.69	—	5.67	5.86	5.55	—	—	5.35	5.50
Serge Island	5.43	—	6.85	5.74	5.76	—	6.18	—	—	5.44	5.93
Wet East Estates	4.67	4.70	4.78	5.63	5.68	4.35	5.47	—	—	4.99	5.45
United Estates	5.38	6.79	4.63	—	7.21	7.13	7.77	—	—	6.67	7.40
Worthy Park	—	—	—	—	7.91	5.30	8.56	—	—	8.33	8.33
Central Estates	5.28	6.79	4.63	—	7.52	7.07	8.02	—	—	7.52	7.72
Overall Average	5.42	4.75	4.48	5.54	6.02	5.99	6.38	4.65	4.59	5.05	5.81

TABLE XIII

COMPARISON OF VARIETIES SHOWING ACTUAL YIELDS AND EXPRESSED AS A PERCENTAGE OF B4362—1958 CROP

	B4362	B3439	B34104	B37161	B37172	B41227	B42231	Co331	Co421
Tons cane per acre per month	2.73 (100) 2.75 (100) 2.75 (100) 2.48 (100) 2.35 (100) 2.76 (100) 2.73 (100) 2.70 (100)	2.60 (95)	2.20 (80)	1.98 (72)	2.64 (106)	2.79 (118)	2.71 (98)	2.21 (81)	2.10 (78)
Cwt. sugar per acre per month	6.33 (100) 6.39 (100) 6.51 (100) 5.06 (100) 6.53 (100) 6.43 (100) 6.06 (100) 6.39 (100)	5.42 (86)	4.75 (74)	4.48 (69)	5.54 (109)	6.02 (92)	5.99 (93)	4.65 (72)	4.59 (72)
Tons cane per ton sugar	8.64 (100) 8.62 (100) 8.46 (100) 9.80 (100) 8.41 (100) 8.60 (100) 9.03 (100) 8.44 (100)	9.61 (90)	9.26 (93)	8.86 (95)	9.52 (103)	9.27 (91)	9.05 (95)	9.51 (95)	9.14 (92)

TABLE XIV

TONS CANE PER ACRE FOR ESTATES BY CANE CLASS—CROP 1958

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	38.0	34.9	—	31.9	31.1	28.5	26.8	30.1
Barnett	53.4	33.9	—	35.2	30.3	25.3	21.8	28.1
Bernard Lodge	50.6	40.0	—	28.8	27.0	26.7	27.3	30.2
Caymanas	57.4	37.1	—	38.2	36.9	36.0	40.3	39.5
Frome	—	37.6	—	30.5	33.1	28.5	26.8	31.4
Gray's Inn Central	57.2	26.1	—	25.6	25.4	25.0	27.6	26.6
Hampden	36.4	26.4	—	27.0	21.9	20.9	19.7	23.0
Holland	—	28.1	—	30.7	30.3	24.8	24.2	26.7
Innswood	—	53.4	—	37.1	36.7	29.0	27.7	32.0
Jamaica Sugar Estates	46.7	36.2	—	34.4	34.1	31.5	38.5	37.3
Long Pond	39.1	30.5	—	33.4	28.7	23.1	22.4	27.1
Monymusk	57.4	38.9	42.4	33.4	32.6	31.1	31.1	33.7
New Yarmouth	50.6	38.7	—	32.3	33.9	31.0	30.2	34.8
Richmond/Llandoverly	40.9	41.2	—	38.8	33.9	29.9	30.5	36.2
Rose Hall	—	25.0	—	24.9	20.3	19.2	20.0	20.9
Serge Island	40.1	27.7	—	29.7	26.8	26.6	27.1	28.8
Sevens	43.3	29.6	—	35.7	26.2	27.6	25.8	29.3
United Estates	62.4	38.5	—	38.1	32.5	30.3	28.9	35.0
Vale Royal	27.0	26.2	—	29.5	29.2	26.4	23.8	25.4
Worthy Park	—	35.7	—	34.3	33.7	30.6	32.1	32.8
Average	47.8	35.7	42.4	33.5	31.5	28.9	28.4	31.5

TABLE XV
TONS CANE PER TON THEORETICAL 96° SUGAR FOR ESTATES BY CANE CLASS—1958 CROP

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	8.81	8.12	—	7.91	8.17	8.00	8.31	8.13
Barnett	8.83	7.62	—	7.50	7.62	7.71	7.72	7.69
Bernard Lodge	7.90	9.16	—	8.67	8.12	8.42	8.35	8.40
Caymanas	8.54	9.87	—	9.84	9.36	10.23	11.48	10.22
Frome	—	8.40	—	8.31	8.44	8.17	8.50	8.39
Gray's Inn Central	10.50	12.49	—	12.15	11.45	11.16	11.96	11.88
Hampden	8.94	8.85	—	8.57	8.42	8.77	8.68	8.72
Holland	—	8.88	—	8.67	8.81	8.04	8.73	8.71
Innswood	—	9.02	—	8.99	9.16	8.71	9.72	9.40
Jamaica Sugar Estates	9.23	10.71	—	9.38	9.23	9.31	9.32	9.42
Long Pond	9.85	10.11	—	9.38	9.23	9.16	9.11	9.41
Monymusk	9.05	9.90	10.29	11.35	9.91	9.70	9.57	9.91
New Yarmouth	8.89	10.66	—	9.21	8.89	8.89	9.27	9.23
Richmond/Llandovery	11.15	11.80	—	10.90	9.95	10.18	9.33	10.65
Rose Hall	—	8.46	—	8.28	8.42	8.69	8.57	8.50
Serge Island	8.31	7.95	—	7.55	7.56	7.78	7.81	7.85
Sevens	9.77	10.32	—	9.69	9.25	9.00	9.19	9.51
United Estates	8.63	7.83	—	8.12	8.05	8.00	8.03	8.05
Vale Royal	8.74	9.72	—	9.10	8.40	8.77	8.94	9.02
Worthy Park	—	7.84	—	7.42	6.96	7.31	7.24	7.32
Average	8.82	9.21	10.29	9.31	8.86	8.95	9.04	9.05

TABLE XVI
TONS THEORETICAL 96° SUGAR PER ACRE FOR ESTATES BY CANE CLASS—1958 CROP

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	4.31	4.30	—	4.03	3.82	3.56	3.23	3.71
Barnett	6.04	4.45	—	4.69	3.97	3.28	2.83	3.65
Bernard Lodge	6.40	4.37	—	3.32	3.32	3.16	3.26	3.60
Caymanas	6.72	3.76	—	3.89	3.94	3.52	3.51	3.87
Frome	—	4.48	—	4.28	3.92	3.46	3.15	3.74
Gray's Inn Central	5.45	2.09	—	2.11	2.21	2.24	2.31	2.24
Hampden	4.08	2.98	—	3.15	2.60	2.38	2.27	2.64
Holland	—	3.17	—	3.54	3.43	3.08	2.78	3.06
Innswood	—	5.92	—	4.12	4.01	3.33	2.85	3.41
Jamaica Sugar Estates	5.05	3.38	—	3.66	3.69	3.38	4.08	3.96
Long Pond	3.97	3.02	—	3.56	3.11	2.53	2.46	2.88
Monymusk	6.34	3.93	4.12	2.94	3.29	3.21	3.25	3.41
New Yarmouth	5.69	3.63	—	3.49	3.81	3.48	3.26	3.77
Richmond/Llandovery	3.67	3.49	—	3.56	3.41	2.93	3.26	3.40
Rose Hall	—	2.95	—	3.01	2.41	2.23	2.33	2.46
Serge Island	4.83	3.49	—	3.94	3.55	3.42	3.46	3.67
Sevens	4.44	2.87	—	3.69	2.83	3.07	2.80	3.08
United Estates	7.23	4.91	—	4.69	4.03	3.78	3.60	4.35
Vale Royal	3.09	2.70	—	3.24	3.48	3.01	2.66	2.81
Worthy Park	—	4.55	—	4.62	4.85	4.18	4.43	4.48
Average	5.42	3.88	4.12	3.60	3.56	3.23	3.14	3.48

TABLE XVII

PERCENTAGE ACREAGE REAPED IN EACH CANE CLASS FOR ESTATES AND ECOLOGICAL GROUPS AND AVERAGE LENGTH OF GROWTH IN MONTHS

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average length of growth in months
Appleton	—	16	—	15	22	17	30	13-36
Barnett	2	19	—	14	8	16	39	12-07
Frome	—	19	—	12	19	16	34	11-73
Holland	—	23	—	14	9	8	46	12-46
Wet West Estates ..	1	19	—	13	17	15	35	—
Hampden	8	13	—	10	6	15	48	12-93
Long Pond	6	16	—	12	15	14	37	11-51
Rose Hall	—	11	—	10	20	21	38	10-99
Vale Royal	4	20	—	3	7	13	52	12-27
Dry North Coast ..	6	15	—	8	11	15	45	—
Bernard Lodge	8	8	—	14	10	18	42	12-49
Caymanas	7	9	—	18	13	19	35	13-17
Innswood	—	11	—	5	9	8	67	12-89
Monymusk	2	18	1	13	17	24	25	11-27
New Yarmouth	12	12	—	14	21	17	25	12-29
Sevens	4	20	—	16	13	19	27	10-93
Irrigated Estates ..	5	15	1	13	14	20	32	—
Gray's Inn Central ..	—	13	—	16	10	14	47	11-59
Jamaica Sugar Estates ..	9	10	—	4	10	11	56	13-14
Richmond/Llandovery ..	6	24	—	25	14	13	18	12-36
Serge Island	11	26	—	8	19	15	21	12-36
Wet East Estates ..	7	16	—	12	13	13	39	—
United Estates	5	21	—	16	19	13	25	11-74
Worthy Park	—	15	—	7	12	14	51	10-75
Central Estates	5	18	—	13	16	14	34	—
Overall Average ..	4	16	—	12	16	17	35	—
Average length of growth in months	16-62	12-76	11-80	11-57	11-67	11-50	11-61	11-99

TABLE XVIII
CWT. THEORETICAL 96° SUGAR PER ACRE PER MONTH FOR ESTATES BY CANE CLASS—CROP 1958

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	5.39	6.25	—	6.10	5.83	7.86	4.76	5.55
Barnett	6.74	7.34	—	8.27	6.63	5.03	4.88	6.05
Bernard Lodge	7.39	6.88	—	4.83	5.57	5.29	5.41	5.76
Caymanas	7.89	5.67	—	5.99	6.15	5.44	5.50	5.87
Frome	—	6.81	—	7.33	6.66	5.92	5.78	6.38
Gray's Inn Central	6.81	3.19	—	3.70	3.81	4.27	4.01	3.86
Hampden	4.58	4.35	—	5.51	4.44	3.82	3.63	4.08
Holland	—	4.96	—	6.06	5.55	4.84	4.45	4.91
Innswood	—	6.37	—	6.72	6.73	5.78	4.66	5.29
Jamaica Sugar Estates	5.79	5.59	—	5.55	5.79	5.23	6.39	6.03
Long Pond	5.17	4.84	—	6.37	5.64	4.53	4.51	5.00
Monymusk	8.04	6.45	4.63	5.45	5.88	5.99	6.05	6.04
New Yarmouth	6.91	5.85	—	5.90	6.51	6.00	5.68	6.14
Richmond/Llandovery	5.17	5.32	—	6.02	5.71	4.93	5.38	5.50
Rose Hall	—	4.68	—	5.70	4.57	4.08	4.27	4.47
Serge Island	5.90	5.91	—	6.61	5.89	5.82	5.84	5.93
Sevens	5.00	4.82	—	7.52	5.40	5.78	5.48	5.64
United Estates	9.14	8.41	—	7.92	7.19	6.66	6.25	7.40
Vale Royal	3.90	4.04	—	5.40	5.98	5.07	4.53	4.58
Worthy Park	—	7.28	—	8.95	9.16	8.15	8.47	8.33
Average	6.52	6.08	4.63	6.22	6.10	5.61	5.41	5.81

TABLE XIX
DISTRIBUTION OF FERTILIZERS
ACRES FERTILIZED % TOTAL ACRES REAPED FOR PLANTS AND RATOONS BY ECOLOGICAL GROUPS 1954-1958

Groups	NITROGEN		PHOSPHATE		POTASH	
	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons
1954						
Wet West	98	99	56	10	87	95
North Coast	69	73	2	1	53	58
Irrigated	96	96	3	5	18	16
Wet East	83	99	45	4	28	2
Central	100	100	42	24	99	98
1955						
Wet West	96	98	41	13	94	95
North Coast	100	99	2	8	17	17
Irrigated	100	96	24	8	59	33
Wet East	100	99	1	1	77	72
Central	100	99	2	25	100	80
1956						
Wet West	98	99	28	13	97	96
North Coast	99	98	—	2	71	23
Irrigated	99	100	2	3	20	15
Wet East	88	98	11	10	51	41
Central	100	98	43	25	100	94
1957						
Wet West	91	97	22	12	86	95
North Coast	100	98	—	2	81	83
Irrigated	94	100	—	—	21	25
Wet East	95	98	1	11	50	38
Central	99	94	79	35	98	75
1958						
Wet West	96	98	18	8	94	97
North Coast	97	97	5	12	96	97
Irrigated	100	99	—	1	16	19
Wet East	93	100	36	14	57	41
Central	99	99	53	44	96	97

TABLE XX
PERCENTAGE ACREAGE FERTILIZED WITH NITROGEN FOR EACH CANE CLASS 1954-1958

Crop year	PLANTS		Mean	RATOONS			
	Fall	Spring		1st	2nd	3rd	Old
1954	94	90	92	94	93	92	97
1955	97	99	98	98	99	98	98
1956	96	99	98	100	99	99	98
1957	96	94	95	99	99	99	98
1958	99	97	98	99	99	99	98

TABLE XXI
AVERAGE N, P₂O₅, K₂O APPLICATIONS FOR PLANTS AND RATOONS BY ECOLOGICAL GROUPS 1954-1958
(lbs. per acre)

Groups		1954			1955			1956			1957			1958		
		N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Wet West	Plants	56	34	92	56	45	99	48	36	73	62	30	96	61	46	97
	Ratoons	61	22	101	60	31	94	49	26	82	61	28	94	65	40	95
North Coast	Plants	29	12	72	32	11	81	36	—	73	41	—	82	44	16	101
	Ratoons	31	12	58	32	12	83	32	45	70	38	20	88	40	16	94
Irrigated	Plants	99	21	74	101	19	78	105	56	89	97	—	76	100	—	81
	Ratoons	95	16	70	100	19	71	97	52	96	102	54	95	101	49	95
Wet East	Plants	75	34	68	78	21	77	68	32	76	77	33	108	70	75	108
	Ratoons	83	33	61	87	28	81	77	31	91	79	23	88	84	66	96
Central	Plants	57	38	85	72	28	87	71	32	85	56	39	88	75	27	87
	Ratoons	62	34	63	64	27	90	71	26	93	72	39	88	76	21	88

APPENDIX II

EXPERIMENT DATA

PART I

RESULTS OF FERTILIZER EXPERIMENTS

A summary of the results of the fertilizer experiments reaped in 1958 is presented below. Actual yields, in tons cane per acre, % sucrose or Pol % cane and tons sugar per acre or tons pol per acre obtained by control are quoted, and yields obtained from the various levels of fertilizer are expressed as a percentage of control. The variety used in each experiment is also noted.

N.B.—The term "cut back" used in the case of certain fall plant experiments indicates that although planted in the fall of a particular year the cane was reaped the following crop, thus shortening the usual growing period.

(a) FORMAL AND DISPERSED BLOCK EXPERIMENTS

	Cwt. per acre									S.E. % g.m.	Significant difference					
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)			
1. Frome—Black Heath—Chapman (3x3x3 NPK) (B4362)																
Spring Plants																
		0	2	4		0	3	6		0	1½	3				
Cane	..	19.9	123	136		23.7	101	101		23.5	103	101	9.2	11.0	—	—
Sucrose	..	6.4	100	93		6.7	105	105		6.5	101	98	5.3	5.5	—	—
Sugar	..	3.1	123	128		3.5	105	106		3.6	105	100	8.6	10.2	—	—
2. Long Pond—Etingdon—Grass Hill Bottom (3x3x3 NPK) (Co421)																
Fall Plants																
		0	2	4		0	2	4		0	1	2				
Cane	..	44.1	102	107		45.3	104	97		41.7	114	112	12.1	—	—	—
Sucrose	..	12.0	96	101		11.6	102	104		12.0	100	97	7.0	—	—	—
Sugar	..	5.3	99	108		5.3	106	100		5.0	114	109	11.9	—	—	—
1st Ratoons																
Cane	..	31.3	127	139		35.8	115	105		37.5	104	102	21.6	26.5	—	—
Sucrose	..	10.5	98	101		10.5	99	101		10.3	102	102	8.6	—	—	—
Sugar	..	3.3	124	141		3.8	113	106		3.9	106	105	24.0	29.3	—	—
2nd Ratoons																
Cane	..	23.1	120	126		25.6	103	107		23.6	119	118	11.2	12.9	—	12.7
Sucrose	..	11.7	109	109		12.4	99	103		12.9	90	100	10.6	—	—	—
Sugar	..	2.4	131	138		2.9	101	109		2.7	108	118	14.4	17.8	—	—
3. Richmond/Llandovery—Richmond—Hector Piece (B4362) (Dispersed Blocks) (3x3x3 NPK)																
Spring Plants																
		0	2	4		0	2	4		0	1	2				
Cane	..	35.7	103	110		37.1	102	99		36.7	100	104				
Sucrose	..	14.2	101	101		14.4	99	99		14.0	103	103				
Sugar	..	5.1	104	111		5.4	100	98		5.1	104	107				
Richmond/Llandovery—Richmond—Laughlands 3 (B41227)																
Cane	..	43.6	106	105		40.0	119	120		44.5	101	104				
Sucrose	..	14.4	90	89		13.0	105	104		13.2	101	103				
Sugar	..	6.3	95	94		5.2	125	125		5.8	103	108				
Richmond/Llandovery—Richmond—Lime Kiln 3 (B41227)																
Cane	..	43.5	100	105		41.4	107	113		45.4	94	94				
Sucrose	..	10.2	108	117		11.0	103	98		11.1	100	97				
Sugar	..	4.2	108	123		4.6	110	110		5.1	96	93				
Summary:																
Cane	..	40.9	103	107		39.5	109	111		42.2	98	101				
Sucrose	..	12.9	100	102		12.8	102	100		12.8	101	101				
Sugar	..	5.2	102	109		5.1	112	111		5.3	101	103				
1st Ratoons																
Richmond/Llandovery—Richmond—Hector Piece																
Cane	..	39.1	81	97		33.8	110	112		34.1	109	109				
Sucrose	..	—	—	—		—	—	—		—	—	—				
Sugar	..	—	—	—		—	—	—		—	—	—				
Richmond/Llandovery—Richmond—Laughlands 3																
Cane	..	30.9	122	135		30.2	125	140		35.6	105	105				
Richmond/Llandovery—Richmond—Lime Kiln 3																
Cane	..	38.2	126	111		38.7	112	121		42.8	109	92				
Sucrose	..	12.1	106	99		12.6	94	100		12.2	101	102				
Sugar	..	4.6	133	110		4.9	106	121		5.3	108	94				

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
	0	2	4	0	2	4	0	1	2				
Summary:													
Cane	36.1	110	114	34.2	116	124	37.5	108	102	11.0	—	24.3	—
Sucrose	12.1	106	99	12.6	94	100	12.2	101	102	—	—	—	—
Sugar	4.6	133	110	4.9	106	121	5.3	108	94	—	—	—	—
2nd Ratoons													
Richmond/Llandovery—Richmond—Hector Piece													
Cane	40.8	100	96	39.9	97	106	42.4	99	98				
Sucrose	7.5	107	122	9.5	85	76	9.0	80	94				
Sugar	3.0	111	119	3.8	82	81	3.8	79	82				
Richmond/Llandovery—Richmond—Loughlands 3													
Cane	28.5	117	137	27.8	135	129	30.0	122	114				
Sucrose	11.6	101	96	12.1	86	100	11.3	99	106				
Sugar	3.3	118	132	3.4	116	129	3.4	121	121				
Richmond/Llandovery—Richmond—Lime Kiln 3													
Cane	47.9	112	105	47.2	104	117	51.6	104	90				
Sucrose	9.1	111	110	10.4	88	91	9.8	102	94				
Sugar	4.4	123	116	4.9	93	108	5.1	106	84				
Summary:													
Cane	39.1	109	110	38.3	109	116	41.3	107	95	6.1	6.5	6.7	6.2
Sucrose	9.4	106	108	10.7	87	90	10.1	95	98	7.9	—	—	—
Sugar	3.6	118	122	4.0	96	105	4.1	101	94	11.9	13.5	—	—
4. Rose Hall—Orange Valley—Still House (3x3x3 NPK) (B41227)													
Fall Plants													
Cane	49.2	100	97	45.0	110	117	48.7	94	107	10.6	—	11.7	10.8
Sucrose	13.5	92	95	12.8	105	98	12.0	114	108	24.8	—	—	—
Sugar	6.6	93	96	5.6	121	119	5.9	103	116	27.7	—	—	—
1st Ratoons													
Cane	27.0	97	97	26.7	99	98	26.0	104	102	13.2	—	—	—
Sucrose	11.3	95	97	10.9	100	103	11.1	97	98	8.4	—	—	—
Sugar	3.0	93	95	2.9	98	100	2.9	100	101	10.7	—	—	—
5. Serge Island—Hall Head—Gutter Piece (3x3x3 NPK) (B3439)													
Spring Plants													
Cane	23.6	107	99	24.5	102	92	23.2	100	111	22.1	—	—	—
Sucrose	13.2	98	96	12.9	99	102	12.6	102	108	5.3	—	—	5.5
Sugar	3.1	104	95	3.2	101	93	2.9	102	119	23.9	—	—	—
1st Ratoons													
Cane	20.2	115	142	22.9	106	109	22.8	111	105	17.1	20.4	—	—
3rd Ratoons													
Cane	42.7	105	111	43.7	101	108	43.8	107	102	8.6	9.1	—	—
Sucrose	15.0	100	97	14.9	101	100	15.1	95	101	7.7	—	—	—
Sugar	6.4	105	107	6.5	102	108	6.6	102	103	11.9	—	—	—
4th Ratoons													
Cane	28.0	111	110	30.9	93	98	31.7	101	83	15.5	—	—	14.8
Sucrose	14.4	99	102	14.3	101	102	14.5	95	104	9.1	—	—	—
Sugar	4.0	111	112	4.4	93	100	4.6	97	86	21.2	—	—	—
6. United Estates—Angels—Roberts I (Dispersed Blocks 3x3x3 NPK) (B4362)													
(Not reaped as plants)													
1st Ratoons													
Cane	27.5	109	115	30.3	96	99	26.6	114	122				
Sucrose	13.9	92	93	12.8	104	104	13.1	101	102				
Sugar	3.8	102	107	3.9	98	102	3.4	116	124				
United Estates—Angels—Roberts II													
Cane	23.1	112	118	21.4	141	116	20.9	129	139				
Sucrose	12.9	96	111	12.9	102	105	12.2	109	116				
Sugar	3.0	108	133	2.8	145	122	2.5	138	161				
United Estates—Angels—Roberts III													
Cane	28.9	105	122	31.2	105	97	31.5	100	99				
Sucrose	12.3	101	99	12.1	107	99	12.5	97	99				
Sugar	3.6	106	121	3.8	111	96	3.9	98	97				

	Cwt. per acre									S.E. % g.m.	Significant difference				
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)		
	0	2	4	0	2	4	0	1	2						
Summary:															
Cane	..	..	26.5	109	118	27.6	111	103	26.3	112	117	12.7	13.9	—	13.9
Sucrose	..	..	13.0	96	101	12.6	104	103	12.6	102	105	8.2	—	—	—
Sugar	..	..	3.4	105	119	3.5	116	105	3.3	115	124	13.8	14.9	—	15.6
2nd Ratoons															
United Estates—Angels—Roberts I															
Cane	..	..	29.9	109	130	34.7	97	95	33.2	92	113				
Sucrose	..	..	11.9	97	103	11.1	109	114	12.3	95	96				
Sugar	..	..	3.6	106	134	3.9	104	109	4.1	88	108				
United Estates—Angels—Roberts II															
Cane	..	..	24.8	117	110	24.4	123	110	22.3	125	140				
Sucrose	..	..	13.7	101	102	14.4	90	98	14.1	97	98				
Sugar	..	..	3.4	120	113	3.5	110	106	3.1	121	137				
United Estates—Angels—Roberts III															
Cane	..	..	30.8	112	114	32.8	105	102	32.9	98	107				
Sucrose	..	..	12.1	90	98	11.4	100	106	11.5	100	103				
Sugar	..	..	3.7	100	112	3.7	103	108	3.8	97	110				
Summary:															
Cane	..	..	28.5	113	118	30.6	107	101	29.5	103	118	13.0	14.4	—	13.9
Sucrose	..	..	12.6	96	101	12.3	98	105	12.6	99	98	7.7	—	—	—
Sugars	..	..	3.5	108	119	3.7	106	108	3.7	100	117	9.4	10.3	—	9.9
7. United Estates—Windsor Park—Worcester 10 (3x3x3 NPK) (B4362)															
			0	2	4	0	1	2	0	1	2				
Fall Plants															
Cane	..	..	64.6	102	99	68.1	92	96	62.7	102	111	14.1	—	—	—
Sucrose	..	..	12.3	97	98	12.0	100	103	11.8	105	102	8.3	—	—	—
Sugar	..	..	7.9	100	100	8.1	92	99	7.4	107	113	12.7	—	—	—
United Estates—Windsor Park—Worcester 12															
Cane	..	..	69.1	99	96	68.2	99	100	66.7	100	105	10.4	—	—	—
Sucrose	..	..	12.1	98	92	11.6	103	100	11.6	99	102	6.8	—	—	—
Sugar	..	..	8.3	97	88	7.9	102	101	7.8	99	107	14.2	—	—	—
United Estates—Windsor Park—Worcester 14															
Cane	..	..	55.5	109	112	56.3	109	106	58.3	101	104	8.4	—	—	—
Sucrose	..	..	13.2	102	100	14.0	93	91	12.9	104	105	5.3	—	—	—
Sugar	..	..	7.3	111	112	7.9	102	96	7.5	105	109	10.1	10.9	—	—

(b) MISCELLANEOUS FERTILIZER EXPERIMENTS

(i) TYPES OF NITROGEN

1. Appleton—Appleton—Sampson Gate II (Sulphate of ammonia vs. Urea) (B41227)

	Sulphate of ammonia			Urea		S.E. % g.m.	Significant difference
	0	1½	3	0.68	1.36		
Spring Plants							
Cane.. ..	26.1	114	125	109	125	7.4	11.7
Sucrose	12.2	102	100	100	101	3.2	—
Sugar	3.2	116	126	109	127	8.0	16.4
1st Ratoons							
Cane.. ..	34.7	110	114	110	117	3.6	5.4
Sucrose	13.9	95	87	93	94	7.2	—
Sugar	4.8	105	100	102	110	4.5	6.4

2. Appleton—Raheen—Negro House 3 (Sulphate of ammonia vs. Urea) (B41227)

	Sulphate of ammonia			Urea		S.E. % g.m.	Significant difference
	0	1½	3	0.68	1.36		
Spring Plants							
Cane.. ..	39.6	111	114	110	110	5.1	7.6
Sucrose	14.8	106	98	98	109	5.1	7.2
Sugar	5.9	118	112	108	120	5.5	8.5
1st Ratoons							
Cane.. ..	30.1	137	142	118	131	7.9	13.6
Sucrose	16.5	95	96	96	97	4.3	—
Sugar	4.9	131	136	112	127	11.3	18.8

Appleton—Raheen—Turner Piece 3 (Sulphate of ammonia vs. Urea) (B41227)

	Sulphate of ammonia			Urea		S.E. % g.m.	Significant difference
	0	1½	3	0.68	1.36		
Spring Plants							
Cane.. ..	37.0	113	109	100	104	10.3	—
Sucrose	13.7	101	101	98	99	4.1	—
Sugar	5.1	114	109	98	104	10.4	—
1st Ratoons							
Cane.. ..	39.9	111	108	102	106	7.2	—
Sucrose	15.3	96	95	97	98	3.6	—
Sugar	6.1	106	102	100	104	8.7	—

4. Barnett—Bogue—Hardtime 3 (Sulphate of ammonia vs. Urea) (B41227)

	Sulphate of ammonia			Urea		S.E. % g.m.	Significant difference
	0	2	4	0.9	1.8		
Spring Plants							
Cane.. ..	36.4	95	95	104	103	6.6	—
Sucrose	11.6	104	112	112	100	7.2	10.4
Sugar	4.2	98	108	116	104	10.9	—
1st Ratoons							
Cane.. ..	24.1	108	115	116	117	13.2	—

5. Barnett—Catherine Mt.—Boiling House (Sulphate of ammonia vs. Urea) (B4362)

	Sulphate of ammonia			Urea		S.E. % g.m.	Significant difference
	0	2	4	0.9	1.8		
Spring Plants							
Cane.. ..	33.1	98	101	94	99	5.7	—
Sucrose	13.0	100	96	101	102	6.9	—
Sugar	4.3	97	97	94	101	6.0	—
1st Ratoons							
Cane.. ..	25.5	100	103	108	113	8.8	—

6. Caymanas—Farm II—Section 9 (Sulphate of Ammonia vs. Urea) (B4362)

	Sulphate of Ammonia		Low Biuret 3 cwt/s/acre	High Biuret 3 cwt/s/acre	S.E. % G.M.	Significant difference
	Control	3 cwt/s S/A per acre				
Spring Plants						
Cane.. ..	45.2	103	94	96	5.2	—

7. Frome—Shrewsbury—Cambridge (N and K Trace Elements) (B4362)

	1	2	3	4	5	6	S.E. % G.M.	Significant difference
Spring Plants								
Cane.. ..	40.1	96	95	87	96	98	5.6	—
Sucrose	12.9	102	106	103	104	94	8.0	—
Sugar	6.2	98	101	100	99	93	9.3	—
1. =	Normal method of N. Application						No Trace elements	
2. =	" " " " " "						+	
3. =	Dibbling " " " " " "						No	
4. =	" " " " " "						+	
5. =	Broadcast " " " " " "						No	
6. =	" " " " " "						+	

8. Holland—Shaw—Factory Piece (Sulphate of Ammonia vs. Urea) (B4362)

	Sulphate of Ammonia		Low Biuret Urea 3 cwt/s per acre	High Biuret Urea 3 cwt/s per acre	S.E. % G.M.	Significant difference
	Control	3 cwt/s S/A per acre				
Spring Plants						
Cane.. ..	27.0	101	102	107	11.7	—
Sucrose	14.3	101	102	102	3.3	—
Sugar	8.9	103	105	109	11.9	—

9. Innswood—Cotton Tree—Section 5 (Sulphate of Ammonia vs. Urea) (B41227)

	Sulphate of ammonia			Urea		S.E. % G.M.	Significant difference
	0	2	4	1	2		
Spring Plants							
Cane.. ..	41.6	114	129	122	127	5.6	9.1
Sucrose	12.8	96	96	99	96	3.9	—
Sugar	5.3	109	124	122	120	7.5	11.9

10. Jamaica Sugar Estates—Golden Grove—Section 17 (Sulphate of ammonia vs. Urea) (B37172)

	Sulphate of ammonia			Urea		S.E. % g.m.	Significant difference
	0	2	4	1	2		
Spring Plants							
Cane.. ..	30.5	140	124	120	111	6.1	10.0
1st Ratoons							
Cane.. ..	31.9	115	135	113	136	6.3	10.3
Sucrose	10.9	105	99	107	105	—	—
Sugar	8.5	121	134	121	144	—	—

11. Jamaica Sugar Estates—Wheelerfield—Section 22 (Sulphate of ammonia vs. Urea)

	Sulphate of ammonia		Urea		S.E. % g.m.	Significant difference
	0	2	2	2		
Spring Plants						
Cane.. ..	50.1	100	103	100	9.7	—

12. Monymusk—Bog—Gardener 6 (Sulphate of ammonia) (B42231)

	1	2	3	4	5	S.E. % g.m.	Significant difference
Spring Plants							
Cane.. ..	50.1	109	99	98	100	9.0	—
Sucrose	10.5	102	105	115	104	15.1	—
Sugar	5.3	111	103	112	103	15.6	—

* Figures in brackets } 1. = (3) Normal } applied 6 weeks after planting
= cwt S/A per acre. } 2. = (3) Dibbled }
} 3. = (3) Broadcast }
} 4. = (3) Broadcast + (2) Normal: Broadcast application S/A 6 weeks after planting + 2 cwt S/A applied normally at 5 months old.
} 5. = (2) Broadcast + (3) Normal: Normal application 6 weeks after planting + (2) S/A applied Broadcast at 5 months old.

13. Monymusk—Exeter—Exeter 14 (Sulphate of ammonia) (B38192)

	1	2	3	4	5	S.E. % g.m.	Significant difference
Spring Plants							
Cane.. ..	41.3	93	100	102	100	8.0	—
Sucrose	7.8	83	83	88	95	25.9	—
Sugar	3.2	75	82	91	97	38.0	—

* Treatments are similar to those of Monymusk—Bog—Gardener 6 above.

14. Monymusk—Exeter—Section 65 (Sulphate of ammonia vs. Urea) (B41227)

	Sulphate of ammonia			Urea		S.E. % g.m.	Significant difference
	0	3	6	1½	3		
Spring Plants							
Cane.. ..	75.9	102	103	99	109	9.3	—
Sucrose	9.6	97	98	91	92	11.6	—
Sugar	7.3	97	99	89	99	10.5	—
1st Ratoons							
Cane.. ..	68.5	87	82	80	85	13.7	—
Sucrose	8.3	83	88	100	108	17.7	—
Sugar	5.6	74	71	86	95	21.5	—

15. Monymusk—Marelands—Hillside—Walker II (Sulphate of ammonia) (B38192)

	1	2	3	4	5	S.E. % g.m.	Significant difference
Spring Plants							
Cane.. ..	66.1	93	98	98	87	8.1	—
Sucrose	8.5	97	101	101	101	11.4	—
Sugar	5.6	91	97	99	88	11.6	—
1. = 3 cwt S. Normal 2. = 3 " Dibbled 3. = 3 " Broadcast 4. = 3 " Broadcast + 2 cwt S. Normal 5. = 2 " Broadcast + 3 " "							

N.B.—Treatments (1-5) are similar to those of Monymusk—Bog—Gardener 6 and Monymusk Exeter 14.

16. Caymanas—Caymanas—"V" Piece (3 x 2 x 2 x 2 NPKT) (B42231)

	N ₀	N ₁	N ₂	P ₀	P ₁	K ₀	K ₁	T ₀	T ₁	S.E. % g.m.	Significant difference
Standover Spring Plants											
Cane.. ..	73.3	95	104	69.1	109	70.5	105	74.8	93	8.1	8.4
Sucrose	11.8	107	104	12.5	96	12.4	97	12.4	96	9.9	—
Sugar	8.5	103	109	8.6	105	8.7	102	9.3	89	8.4	7.9

17. Caymanas—Caymanas—"N" Piece (3 x 2 x 2 x 2 NPKT) (B42231)

	N ₀	N ₁	N ₂	P ₀	P ₁	K ₀	K ₁	T ₀	T ₁	S.E. % g.m.	Significant difference
Standover Spring Plants											
Cane.. ..	76.6	90	98	73.5	100	73.7	99	76.6	92	15.8	—
Sucrose	9.2	95	99	9.3	94	8.9	104	9.0	101	9.8	—
Sugar	7.1	86	98	6.9	94	6.6	103	6.9	92	22.4	—

18. Caymanas—Caymanas—Lagoon 6 (3 x 2 x 2 x 2 NPKT) (B42231)

	N ₀	N ₁	N ₂	P ₀	P ₁	K ₀	K ₁	T ₀	T ₁	S.E. % g.m.	Significant difference
Standover Spring Plants											
Cane.. ..	68.6	100	96	68.0	96	68.7	96	68.2	88	14.0	—
Sucrose	11.5	97	95	11.1	100	11.0	103	9.0	101	14.7	—
Sugar	7.8	86	91	7.6	97	7.5	99	6.9	92	24.1	—

19. Richmond/Llandovery—Llandovery—Alligator Hole (N-source/placement) (B41227)

Spring Plants	Control	Sulphate of ammonia 2 cwt. per acre	Nitrate of soda 2.62 cwt. per acre	Urea 0.91 cwt. per acre	Ammophos 1 cwt. + 1.12 cwt. S/A per acre	S.E. % g.m.	Significant difference
Cane { Surface	35.8	143	133	137	103	19.1	—
{ Buried		123	135	124	101		
Sucrose { Surface	11.1	97	96	106	103	6.4	9.5
{ Buried		109	95	101	111		
Sugar { Surface	4.0	137	128	144	106	16.6	—
{ Buried		133	128	123	112		
1st Ratoons							
Cane { Surface	38.8	116	108	112	114	16.3	—
{ Buried							

20. Vale Royal—Swanswick—Breeze Mill Common (3 x 2 x 2 Fertilizer x Trace element) (B4362)

Fall Plants		a ₀	a ₁	a ₂	b ₀	b ₁	c ₀	c ₁	d ₀	d ₁	S.E. % g.m.	Significant difference
Cane..	..	15.4	120	133	17.9	102	17.3	109	17.2	110	27.2	18.5
Sucrose	..	13.0	100	98	12.9	100	13.1	97	12.8	102	9.4	—
Sugar	..	2.0	120	132	2.3	102	2.8	107	2.2	111	30.0	20.3

a₀ .. No superphosphate.
a₁ .. 1 cwt. per acre tripple superphosphate applied at base of plants
a₂ .. 2 cwt. per acre tripple superphosphate applied at base of plants.
b₀ .. 1 cwt. S/A x 2 cwt. S/A per acre applied early in crop.
b₁ .. 2 cwt. S/A per acre applied later in crop.
c₀ .. No marl.
c₁ .. 18 tons marl.
d₀ .. No trace element.
d₁ .. Trace elements applied early in plant cane crop only at following rates per acre:—
100 lbs per acre magnesium sulphate
100 " " " Manganese "
50 " " " Copper "
30 " " " Borax "
20 " " " zinc sulphate
1 lb. " " " Sodium Molybdate.

(ii) ARTIFICIAL AND ORGANIC AND LIMING EXPERIMENTS

1. Frome—Belle Isle—Meyersfield—Lime Kiln—(Bagasse, knifing and nitrogen) (B41227)

Fall Plants		Tons per acre bagasse				Knifing		Cwt. per acre Sulphate of ammonia		S.E. % g.m.		Significant difference		
		0	10	20	30	0	1	3	6	A	B	B	K	N
Cane..	..	38.1	91	90	89	30.9	124	31.7	118	15.5	10.2	—	10.8	6.8
Sucrose	..	13.9	98	101	100	14.0	99	14.0	99	3.9	2.8	—	—	—
Sugar	..	5.3	90	91	82	4.3	122	4.4	116	13.1	3.6	10.4	9.0	2.5
1st Ratoons														
Cane..	..	43.0	100	103	100	42.7	103	41.0	112	6.9	6.5	—	—	4.4
Sucrose	..	13.5	100	100	100	13.4	101	13.7	98	3.3	3.9	—	—	2.4
Sugar	..	5.8	100	103	100	5.7	105	5.6	109	6.4	5.7	—	3.7	4.1
2nd Ratoons														
Cane..	..	40.2	100	103	99	39.1	107	39.4	105	10.5	9.9	—	6.7	—
Sucrose	..	13.9	98	101	100	14.0	99	14.0	99	3.9	2.8	—	—	—
Sugar	..	5.6	98	104	98	5.6	102	5.4	108	11.4	11.0	—	—	7.0
3rd Ratoons														
Cane..	..	40.4	105	104	108	41.3	104	40.1	110	11.5	7.0	—	—	4.4
Sucrose	..	7.8	102	102	102	7.8	104	7.6	99	6.5	7.2	—	3.9	—
Sugar	..	5.3	106	105	109	5.3	109	5.3	110	10.3	9.7	—	6.7	6.1

2. Frome—Masemure—Albany—Cotton Tree (Liming, bagasse, N, knifing, cross knifing) (B41227)

Spring Plants		Tons per acre bagasse			Knifing		Cwt. per acre Sulphate of ammonia		Liming		S.E. % g.m.			Significant difference			
		0	15	30	1	2	3	6	0	1	B	K	N	B	K	N	L
Cane..	..	40.8	95	90	39.5	96	37.2	108	37.7	100	7.6	8.2	9.2	6.8	—	5.1	—
Sucrose	..	12.4	98	96	12.1	101	12.1	101	12.4	99	7.6	6.8	5.3	—	—	—	—
Sugar	..	5.1	92	87	4.8	97	4.5	110	4.7	99	11.5	12.8	9.9	10.1	—	5.5	—
1st Ratoons																	
Cane..	..	56.0	99	98	56.8	95	54.6	103	54.9	99	10.5	6.6	9.4	—	4.6	—	—
Sucrose	..	11.9	91	93	11.2	100	11.2	101	11.5	96	9.0	4.3	9.9	9.0	—	—	—
Sugar	..	6.7	90	91	6.4	95	6.1	103	6.3	95	12.2	5.6	12.8	10.8	3.9	—	—
2nd Ratoons																	
Cane..	..	48.5	99	99	48.7	98	48.1	100	48.3	99	13.9	7.4	12.7	—	—	—	—
Sucrose	..	7.6	100	99	7.6	101	7.4	96	7.4	103	4.7	4.2	3.2	—	—	1.7	—
Sugar	..	6.4	99	97	6.4	99	6.5	96	6.5	97	12.2	9.4	12.7	—	—	—	—

3. Frome—Masemure—Albany—Old Town (Liming, bagasse, N, knifing, cross knifing) (B41227)

	Tons per acre bagasse			Knifing		Cwt. per acre Suphate of ammonia		Liming		S.E. % g.m.			Significant difference		
	0	15	30	1	2	3	6	0	1	B	K	N	B	K	N
Spring Plants															
Cane.. ..	36.9	97	89	34.2	106	34.1	106	36.1	97	15.3	8.8	10.5	9.3	—	—
Sucrose ..	11.7	104	103	12.1	98	11.9	103	12.1	100	6.0	7.0	5.5	—	—	—
Sugar ..	4.4	101	91	4.2	104	4.1	108	4.4	98	15.7	13.5	12.7	—	—	—
1st Ratoons															
Cane.. ..	54.0	102	100	54.2	100	52.0	109	54.7	99	5.4	8.3	9.0	—	—	5.0
Sucrose ..	11.8	100	103	12.0	100	12.1	97	11.8	102	6.7	2.1	6.4	—	—	—
Sugar ..	6.4	101	103	6.5	99	6.3	106	6.5	101	8.4	8.2	11.2	—	—	—
2nd Ratoons															
Cane.. ..	48.9	105	103	48.5	106	47.3	112	51.6	94	10.0	10.4	8.8	—	—	5.0
Sucrose ..	7.1	99	101	7.1	100	7.0	98	7.2	98	4.7	4.9	3.5	—	—	1.8
Sugar ..	6.9	103	103	6.9	106	6.7	110	7.2	96	13.7	11.2	9.6	—	—	5.3

4. Innswood—St. Helen's—Section 9c (B41227)

	Tons bagasse per acre				S.E. % g.m.	Significant difference
	0	10	20	30		
Standover Spring						
Cane.. ..	71.7	105	101	96	10.3	—
Sucrose ..	10.1	106	100	98	9.4	—
Sugar ..	7.3	110	101	94	15.1	—
1st Ratoons						
Cane.. ..	50.8	107	102	97	5.5	—
Sucrose ..	12.3	95	96	97	6.3	—
Sugar ..	6.3	101	99	95	10.3	—
2nd Ratoons						
Cane.. ..	41.6	105	104	105	5.2	—

5. Sevens—Parnassus—Section 90a (Liming)

	0			10	20	S.E. % g.m.	Significant difference
Spring Plants							
Cane.. ..	54.0	113	95			11.0	—
Sucrose ..	10.0	98	104			5.4	—
Sugar ..	5.4	111	98			14.5	—
1st Ratoons							
Cane.. ..	33.3	118	100			3.4	3.6
Sucrose ..	13.1	96	97			6.0	—
Sugar ..	4.3	111	96			7.3	7.4

Lime applied at 10 and 20 tons marl per acre

6. Worthy Park—Rod wood Hole—Section 3 (Filter Press mud)

	1	2	3	4	5	6	7	8	9	S.E. % g.m.	Significant difference
Spring Plants											
Cane.. ..	31.2	157	151	149	137	151	123	120	118	6.6	12.7
Sucrose ..	13.4	96	99	97	97	97	99	99	97	3.8	—
Sugar ..	4.2	150	150	145	133	147	126	118	115	6.6	12.5
1. ..	Control.										
2. ..	Filter press mud fortified 10 tons per acre.										
3. ..	" " " " 5 " " " "										
4. ..	" " " " normal 10 " " " "										
5. ..	" " " " " 5 " " " "										
6. ..	4 cwts. triple superphosphate + 3 cwts. S/A per annum.										
7. ..	1 cwt. " " " " " " " "										
8. ..	Crushed marl 20 tons/acre + 3 " " " " " "										
9. ..	" " " " 10 " " " " " "										

(iii) OTHER MATERIALS

FLOTAL

1. United Estates—Whitewater 5 (B41227)

	No flotal			10 cwt. flotal per acre		
Spring Plants						
Cane.. ..	47.2			104		
Sucrose ..	12.7			100		
Sugar ..	6.0			104		
1st Ratoons						
Cane.. ..	49.9			101		
Sucrose ..	12.0			99		
Sugar ..	6.0			100		
2nd Ratoons						
Cane.. ..	36.2			97		
Sucrose ..	12.5			101		
Sugar ..	4.7			94		

PART 2

(a) TRASH BURNING x NITROGEN EXPERIMENTS

1. Frome—Barham—Lookout (B4362)

	CANE			SUCROSE			SUGAR		
	N ₁	N ₂	Mean	N ₁	N ₂	Mean	N ₁	N ₂	Mean
Spring Plants									
B ₀	43.7	103	44.3	14.7	94	14.3	6.4	97	6.3
B ₁	91	109	99	100	101	103	92	113	103
B ₂	109	112	108	94	89	95	103	100	103
Mean	43.7	108	—	14.5	96	—	6.3	105	—

2. Frome—Belle Isle—Sydney (B41227)

	CANE			SUCROSE			SUGAR		
	N ₁	N ₂	Mean	N ₁	N ₂	Mean	N ₁	N ₂	Mean
Spring Plants									
B ₀	25.0	103	25.4	12.4	101	12.3	3.1	103	3.2
B ₁	124	124	122	103	98	100	126	123	122
B ₂	107	115	109	98	98	99	106	113	109
Mean	27.6	103	—	12.3	100	—	3.4	103	—

3. Frome—Masemure—Albany—Guava Walk (B4362)

	CANE			SUCROSE			SUGAR		
	N ₁	N ₂	Mean	N ₁	N ₂	Mean	N ₁	N ₂	Mean
Spring Plants									
B ₀	49.3	114	35.1	14.5	103	14.7	7.1	118	7.8
B ₁	99	103	95	99	100	97	99	103	90
B ₂	116	100	101	95	99	94	110	99	95
Mean	51.7	102	—	14.1	103	—	7.3	102	—

4. Frome—Mint—Mt. Eagle—Plum Tree (B41227)

	CANE			SUCROSE			SUGAR		
	N ₁	N ₂	Mean	N ₁	N ₂	Mean	N ₁	N ₂	Mean
Spring Plants									
B ₀	25.7	113	27.4	14.7	96	14.3	3.8	108	4.0
B ₁	112	109	104	101	100	103	113	108	105
B ₂	132	122	119	96	100	100	126	121	118
Mean	29.5	100	—	14.5	100	—	4.7	100	—

5. Frome—Shrewsbury—Pasture Piece (B41227)

	CANE			SUCROSE			SUGAR		
	N ₁	N ₂	Mean	N ₁	N ₂	Mean	N ₁	N ₂	Mean
Spring Plants									
B ₀	31.5	101	31.7	15.4	99	15.4	4.9	100	4.9
B ₁	163	123	142	99	94	97	161	114	139
B ₂	101	104	102	85	87	89	86	90	88
Mean	38.2	90	—	14.6	98	—	5.7	88	—
Summary:									
	N ₁	N ₂	Mean	N ₁	N ₂	Mean	N ₁	N ₂	Mean
B ₀	35.1	107	36.3	14.3	99	14.2	5.1	106	5.2
B ₁	114	112	109	101	99	100	115	111	109
B ₂	112	109	107	94	94	95	106	102	101
Mean	38.1	100	—	14.0	99	—	5.4	100	—

S.E. % G.M. .. 12.2
 Sig. Diff. .. —

0.23
 3.2

13.8
 —

N.B. B₀ = No Trash burnt.
 B₁ = Trash burnt only before replanting.
 B₂ = Trash burnt every year.
 N₁ = Normal S/A application 3cwt./acre 33 lb. 10 ozs.
 N₂ = 50% extra S/A per acre 4½ " 50 " 6 "

(b) NUTRITION PLOTS

CANE

1. Appleton—Appleton—Morass Ruinate II (Spring Plants)						NP	NK	PK
Control								
					200	236	156	226
N	Effect	..	..	..	-8%			
P	"	..	..	..	30%			
K	"	..	..	..	-12%			
2. Appleton—Appleton—Morass Piece (Spring Plants)						NP	NK	PK
Control								
					196	236	236	196
N	Effect	..	..	..	20%			
P	"	..	..	..	0%			
K	"	..	..	..	0%			
3. Appleton—Appleton—Sand Hole II (Spring Plants)						NP	NK	PK
Control								
					168	212	112	168
N	Effect	..	..	..	-4%			
P	"	..	..	..	28%			
K	"	..	..	..	-38%			
4. Appleton—Appleton—Johns Piece						NP	NK	PK
Control								
					212	228	244	204
N	Effect	..	..	..	13%			
P	"	..	..	..	-5%			
K	"	..	..	..	2%			
5. Appleton—Appleton—Stephen Piece (Side I)						NP	NK	PK
Control								
					188	220	184	185
N	Effect	..	..	..	8%			
P	"	..	..	..	9%			
K	"	..	..	..	-10%			
6. Appleton—Appleton—Steven Piece (Side II)						NP	NK	PK
Control								
					190	188	224	180
N	Effect	..	..	..	11%			
P	"	..	..	..	-11%			
K	"	..	..	..	7%			
7. Appleton—Appleton—Black River Piece						NP	NK	PK
Control								
					292	300	228	240
N	Effect	..	..	..	-1%			
P	"	..	..	..	4%			
K	"	..	..	..	-21%			
8. Appleton—Raheen—Badoo Walk (Spring Plants)						NP	NK	PK
Control								
					172	210	228	164
N	Effect	..	..	..	30%			
P	"	..	..	..	-7%			
K	"	..	..	..	3%			
9. Appleton—Raheen—Black Piece (Spring Plants)						NP	NK	PK
Control								
					196	168	128	140
N	Effect	..	..	..	-12%			
P	"	..	..	..	-5%			
K	"	..	..	..	-26%			

10. Appleton—Raheen—Cow Common A									
					Control	NP	NK	PK	
					260	272	230	314	
N	Effect	..	..	..	-13%				
P	"	..	..	..	20%				
K	"	..	..	..	2%				
11. Appleton—Raheen—Negro House 8d.									
					Control	NP	NK	PK	
					320	416	356	240	
N	Effect	..	..	..	38%				
P	"	..	..	..	-3%				
K	"	..	..	..	-19%				
Summary (a) Appleton									
					Control	NP	NK	PK	
					1446	1998	1740	1399	
N	Effect	..	..	..	6%				
P	"	..	..	..	7%				
K	"	..	..	..	-9%				
Summary (b) Raheen									
					Control	NP	NK	PK	
					948	1066	942	858	
N	Effect	..	..	..	11%				
P	"	..	..	..	2%				
K	"	..	..	..	-11%				
S.E. of g.m. (a and b)					39.7				
Sig. Diff.					—				
12. Barrett—Congo Juba									
					Control	NP	NK	PK	
					200	228	224	216	
N	Effect	..	..	..	9%				
P	"	..	..	..	5%				
K	"	..	..	..	3%				
13. Barnett—Bogue—Charlton 4									
					Control	NP	NK	PK	
					408	560	628	568	
N	Effect	..	..	..	22%				
P	"	..	..	..	9%				
K	"	..	..	..	24%				
14. Barnett—Bogue—Tucker Bottom									
					Control	NP	NK	PK	
					116	240	236	144	
N	Effect	..	..	..	83%				
P	"	..	..	..	9%				
K	"	..	..	..	7%				
Summary:									
					Control	NP	NK	PK	
					724	1028	1088	928	
N	Effect	..	..	..	28%				
P	"	..	..	..	8%				
K	"	..	..	..	15%				
S.E. of g.m.					17.4				
Sig. Diff.					—				
15. Bernard Lodge—Goshen—Section 11									
					Control	NP	NK	PK	
					20	25	13.5	24.5	
Tons Cane	..	..	..	..	13%				
N	Effect	..	..	..	48%				
P	"	..	..	..	16%				
K	"	..	..	..					

16. Bernard Lodge—Halfway Tree—Section 4

	Control	NP	NK	PK
N Effect	53.0	43.5	38.5	56.5
P "	-25%			
K "	10%			
	-2%			

17. Bernard Lodge—Halfway Tree—Section 9

	Control	NP	NK	PK
N Effect	69.5	45.0	55.0	51.0
P "	-17%			
K "	-23%			
	-7%			

18. Bernard Lodge—Halfway Tree—Section 30c

	Control	NP	NK	PK
N Effect	56.0	40.0	53.0	60.0
P "	-20%			
K "	-8%			
	18%			

19. Bernard Lodge—Laurencefield—Section 2 (a)

	Control	NP	NK	PK
N Effect	25.5	6.7	27.0	20.5
P "	-27%			
K "	-48%			
	48%			

20. Bernard Lodge—Laurencefield—Section 2 (b)

	Control	NP	NK	PK
N Effect	31.5	32.5	42.5	44.5
P "	-1%			
K "	4%			
	36%			

21. Bernard Lodge—Lawrencefield—Section 13A

	Control	NP	NK	PK
N Effect	20.0	25.0	13.5	24.5
P "	-13%			
K "	48%			
	-16%			

22. Bernard Lodge—Phoenix Park—Section 11(a)

	Control	NP	NK	PK
N Effect	28.5	46.5	23.5	31.5
P "	17%			
K "	50%			
	-27%			

23. Bernard Lodge—Phoenix Park—Section 14

	Control	NP	NK	PK
N Effect	49.5	48.5	56.0	52.0
P "	3%			
K "	-5%			
	10%			

24. Bernard Lodge—Phoenix Park—Section 15b

	Control	NP	NK	PK
N Effect	60.0	56.0	49.0	54.5
P "	-8%			
K "	1%			
	-11%			

25. Bernard Lodge—Phoenix Park—Section 30

	Control	NP	NK	PK
N Effect	45.5	47.5	41.5	47.5
P "	-4%			
K "	9%			
	-4%			

26. Bernard Lodge—Phoenix Park—Section 31

					Control	NP	NK	PK
					52.5	59.0	51.5	47.5
N	Effect	..	..	..	11%			
P	"	..	..	..	2%			
K	"	..	..	..	-11%			

Summary:

					Control	NP	NK	PK
					289.0	301.0	260.0	289.5
N	Effect	..	..	..	- 8%			
P	"	..	..	..	- 1%			
K	"	..	..	..	3%			
S.E.	% g.m.	..	..	..	16.3			

27. Caymanas—Cow Park—Section 13B

					Control	NP	NK	PK
					212	390	344	328
N	Effect	..	..	..	36%			
P	"	..	..	..	29%			
K	"	..	..	..	12%			

28. Caymanas—Cow Park—Section 14B

					Control	NP	NK	PK
					350	282	372	312
N	Effect	..	..	..	- 1%			
P	"	..	..	..	-18%			
K	"	..	..	..	8%			

29. Caymanas—Cow Park—Section 15A

					Control	NP	NK	PK
					252	440	230	340
N	Effect	..	..	..	13%			
P	"	..	..	..	62%			
K	"	..	..	..	-18%			

30. Caymanas—Cow Park—Section 15B

					Control	NP	NK	PK
					256	308	240	232
N	Effect	..	..	..	12%			
P	"	..	..	..	9%			
K	"	..	..	..	-16%			

31. Caymanas—Cow Park—Section 16A

					Control	NP	NK	PK
					392	288	280	300
N	Effect	..	..	..	-18%			
P	"	..	..	..	-13%			
K	"	..	..	..	-15%			

Summary:

					Control	NP	NK	PK
					1462	1708	1466	1512
N	Effect	..	..	..	7%			
P	"	..	..	..	9%			
K	"	..	..	..	- 6%			
S.E.	% g.m.	..	..	..	21.6			

32. Frome—Blackheath—Allen 4

					Control	NP	NK	PK
					62.0	70.4	68.5	50.0
N	Effect	..	..	..	24%			
P	"	..	..	..	- 8%			
K	"	..	..	..	-11%			

33. Frome—Blackheath—Bennett

					Control	NP	NK	PK
					35.6	36.2	40.5	36.2
N	Effect	..	..	..	7%			
P	"	..	..	..	-5%			
K	"	..	..	..	7%			

34. Frome—Blackheath—Duncan

				Control	NP	NK	PK
N	Effect	..	..	39.7	42.7	44.8	41.7
P	"	..	..	8%			
K	"	..	..	5%			

35. Frome—Blackheath—Mule Pasture

				Control	NP	NK	PK
N	Effect	..	..	52.7	62.3	61.9	65.3
P	"	..	..	5%			
K	"	..	..	11%			

Summary:

				Control	NP	NK	PK
N	Effect	..	..	190.0	211.6	215.6	193.2
P	"	..	..	11%			
K	"	..	..	0%			
S.E.	% g.m.	..	..	2%			
				10.4			

36. Holland—Top Hill 5A

				Control	NP	NK	PK
N	Effect	..	..	84	112	96	108
P	"	..	..	8%			
K	"	..	..	22%			
				4%			

37. Holland—Top Hill 5B

				Control	NP	NK	PK
N	Effect	..	..	140	152	178	146
P	"	..	..	15%			
K	"	..	..	6%			
				11%			

38. Holland—Top Hill 5c

				Control	NP	NK	PK
N	Effect	..	..	212	186	196	146
P	"	..	..	7%			
K	"	..	..	19%			
				14%			

Summary:

				Control	NP	NK	PK
N	Effect	..	..	436	450	470	400
P	"	..	..	10%			
K	"	..	..	6%			
				2%			

S.E. of g.m. = 15.1.

39. Innswood—Section 21

				Control	NP	NK	PK
N	Effect	..	..	428	498	536	528
P	"	..	..	8%			
K	"	..	..	6%			
				15%			

40. Innswood—Gladstone 22

				Control	NP	NK	PK
N	Effect	..	..	353	486	385	385
P	"	..	..	18%			
K	"	..	..	18%			
				8%			

41. Innswood—Gladstone—Section 23

				Control	NP	NK	PK
N	Effect	..	..	420	342	300	360
P	"	..	..	18%			
K	"	..	..	3%			
				13%			

42. Innswood—Gladstone—Section 24

					Control	NP	NK	PK
					508	632	428	414
N	Effect	..	..	..	15%			
P	"	..	..	..	12%			
K	"	..	..	..	-26%			

43. Innswood—Gladstone—Section 25

					Control	NP	NK	PK
					228	300	152	228
N	Effect	..	..	..	-1%			
P	"	..	..	..	39%			
K	"	..	..	..	-28%			

44. Innswood—Gladstone—Section 27

					Control	NP	NK	PK
					452	380	368	404
N	Effect	..	..	..	-13%			
P	"	..	..	..	-4%			
K	"	..	..	..	-7%			

Summary:

					Control	NP	NK	PK
					2389	2638	2169	2319
N	Effect	..	..	..	2%			
P	"	..	..	..	9%			
K	"	..	..	..	-11%			
S.E.	% g.m.	..	..	..	2.53			

45. Long Pond—Andrew Pond 1 (B37161)

					Control	NP	NK	PK
					40	76	128	72
N	Effect	..	..	..	86%			
P	"	..	..	..	-12%			
K	"	..	..	..	72%			

46. Long Pond—Andrew Pond 2 (B41227)

					Control	NP	NK	PK
					112	156	140	104
N	Effect	..	..	..	37%			
P	"	..	..	..	3%			
K	"	..	..	..	-9%			

47. Long Pond—McCaroni (B41227)

					Control	NP	NK	PK
					196	142	152	220
N	Effect	..	..	..	-29%			
P	"	..	..	..	4%			
K	"	..	..	..	10%			

48. Hyde Hall—Cuffie Corner (B41227)

					Control	NP	NK	PK
					104	148	216	172
N	Effect	..	..	..	32%			
P	"	..	..	..	0%			
K	"	..	..	..	54%			

49. Hyde Hall—Top Commodore (B41227)

					Control	NP	NK	PK
					164	108	180	166
N	Effect	..	..	..	-13%			
P	"	..	..	..	-20%			
K	"	..	..	..	27%			

50. Lottery—Bottom Campbell

					Control	NP	NK	PK
N	Effect	..	..	..	156	168	130	116
P	"	..	..	..	10%			
K	"	..	..	..	- 1%			
					-24%			

51. Lottery—Breeze Mill (Co331)

					Control	NP	NK	PK
N	Effect	..	..	..	104	134	104	136
P	"	..	..	..	- 1%			
K	"	..	..	..	30%			
					1%			

52. Lottery—Smith Pce (POJ2878)

					Control	NP	NK	PK
N	Effect	..	..	..	60	68	58	82
P	"	..	..	..	-11%			
K	"	..	..	..	27%			
					9%			

53. Overall: Long Pond and Hyde Hall

					Control	NP	NK	PK
N	Effect	..	..	..	616	630	816	734
P	"	..	..	..	7%			
K	"	..	..	..	- 5%			
					24%			

54. Lottery (Overall)

					Control	NP	NK	PK
N	Effect	..	..	..	320	370	292	334
P	"	..	..	..	1%			
K	"	..	..	..	15%			
					- 9%			

55. Monymusk—Exeter—Exeter 19

					Control	NP	NK	PK
N	Effect	..	..	..	444	428	350	494
P	"	..	..	..	-17%			
K	"	..	..	..	16%			
					- 3%			

56. Monymusk—Exeter—Mumby—Chateau 1

					Control	NP	NK	PK
N	Effect	..	..	..	326	360	296	358
P	"	..	..	..	- 4%			
K	"	..	..	..	15%			
					- 5%			

57. Monymusk—Exeter—Mumby—Chateau 4

					Control	NP	NK	PK
N	Effect	..	..	..	356	360	384	284
P	"	..	..	..	16%			
K	"	..	..	..	13%			
					7%			

58. Monymusk—Exeter—Mumby—Newlands 4

					Control	NP	NK	PK
N	Effect	..	..	..	456	383	342	502
P	"	..	..	..	24%			
K	"	..	..	..	11%			
					1%			

59. Monymusk—Exeter—Mumby—Scale House 8

					Control	NP	NK	PK
N	Effect	..	..	..	260	280	240	280
P	"	..	..	..	- 4%			
K	"	..	..	..	12%			
					- 4%			

60. Monymusk—Exeter—Mumby—Scale House 9

				Control	NP	NK	PK
				220	266	340	284
N	Effect	..	..	20%			
P	"	..	..	- 2%			
K	"	..	..	28%			

61. Monymusk—Exeter—Vizzard Run—Section II

				Control	NP	NK	PK
				322	420	436	302
N	Effect	..	..	37%			
P	"	..	..	- 5%			
K	"	..	..	- 1%			

62. Monymusk—Morelands—John Cuffie 3

				Control	NP	NK	PK
				338	444	450	432
N	Effect	..	..	16%			
P	"	..	..	11%			
K	"	..	..	13%			

63. Monymusk—Morelands—John Cuffie 6

				Control	NP	NK	PK
				344	250	240	182
N	Effect	..	..	- 7%			
P	"	..	..	-26%			
K	"	..	..	-29%			

64. Monymusk—Morelands—John Cuffie 8

				Control	NP	NK	PK
				350	340	384	264
N	Effect	..	..	18%			
P	"	..	..	-18%			
K	"	..	..	-6%			

65. Monymusk—Springfield—Canal 3

				Control	NP	NK	PK
				364	374	276	318
N	Effect	..	..	- 5%			
P	"	..	..	8%			
K	"	..	..	-20%			

66. Monymusk—Springfield—Canal 4

				Control	NP	NK	PK
				234	294	232	296
N	Effect	..	..	- 1%			
P	"	..	..	27%			
K	"	..	..	0%			

67. Monymusk—Springfield—Milk Spring 19

				Control	NP	NK	PK
				294	378	352	376
N	Effect	..	..	9%			
P	"	..	..	17%			
K	"	..	..	8%			

68. Monymusk—Springfield—Milk Spring 22

				Control	NP	NK	PK
				318	356	376	430
N	Effect	..	..	2%			
P	"	..	..	13%			
K	"	..	..	20%			

Summary:						Control	NP	NK	PK
(1) Springfield: Exeter						3594	3539	3624	3924
	N	Effect	..	..	..	-0.1%			
	P	"	..	..	..	8%			
	K	"	..	..	..	0.7%			
(2) Morelands						Control	NP	NK	PK
	N	Effect	..	..	..	1032	1034	1074	878
	P	"	..	..	..	10%			
	K	"	..	..	..	-9%			
						-6%			
69. New Yarmouth—Rowington—Section 14 (1st side)						Control	NP	NK	PK
	P	Effect	..	..	..	512	542	624	612
	K	"	..	..	..	2%			
						17%			
70. New Yarmouth—Rowington—Section 14 (2nd side)						Control	NP	NK	PK
	P	Effect	..	..	..	476	438	302	416
	K	"	..	..	..	10%			
						-21%			
71. New Yarmouth—Caswell Hill—Section 5						Control	NP	NK	PK
	N	Effect	..	..	..	469	382	497	516
	P	"	..	..	..	-11%			
	K	"	..	..	..	-7%			
						19%			
Summary:						Control	NP	NK	PK
	N	Effect	..	..	..	1457	1362	1423	1544
	P	"	..	..	..	-11%			
	K	"	..	..	..	1%			
						4%			
72. Richmond—Banks 5						Control	NP	NK	PK
	N	Effect	..	..	..	240	379	463	364
	P	"	..	..	..	39%			
	K	"	..	..	..	6%			
						34%			
73. Richmond—Banks 7						Control	NP	NK	PK
	N	Effect	..	..	..	378	282	564	355
	P	"	..	..	..	15%			
	K	"	..	..	..	-32%			
						39%			
74. Richmond—Bridge Pce. 1						Control	NP	NK	PK
	N	Effect	..	..	..	384	354	346	465
	P	"	..	..	..	-18%			
	K	"	..	..	..	12%			
						10%			
75. Richmond—Trash House						Control	NP	NK	PK
	N	Effect	..	..	..	340	380	457	376
	P	"	..	..	..	17%			
	K	"	..	..	..	-5%			
						16%			

76. Richmond—Priory 2

	Control	NP	NK	PK
	200	384	248	144
N Effect	84%			
P "	18%			
K "	-33%			

77. Llandovery—Coconut Walk

	Control	NP	NK	PK
	245	317	237	328
N Effect	3%			
P "	34%			
K "	1%			

78. Llandovery—Cooper Shop

	Control	NP	NK	PK
	405	382	307	374
N Effect	-11%			
P "	6%			
K "	-13%			

79. Llandovery—Lower Pasture

	Control	NP	NK	PK
	340	363	257	452
N Effect	-22%			
P "	37%			
K "	1%			

80. Llandovery—Lower Pond

	Control	NP	NK	PK
	298	480	357	317
N Effect	36%			
P "	22%			
K "	-13%			

81. Llandovery—Upper Pasture

	Control	NP	NK	PK
	292	287	382	372
N Effect	1%			
P "	-2%			
K "	30%			

Summary: (Richmond)

	Control	NP	NK	PK
	1542	1779	2078	1704
N Effect	19%			
P "	-4%			
K "	14%			

Summary: (Llandovery)

	Control	NP	NK	PK
	1580	1829	1540	1843
N Effect	2%			
P "	18%			
K "	-0.8%			

82. Serge Island—Serge—April Piece (Spring Plants)

	Control	NP	NK	PK
	235	234	257	220
N Effect	8%			
P "	-8%			
K "	2%			

83. Serge Island—Serge—Corn 1

	Control	NP	NK	PK
	267	259	317	231
N Effect	15%			
P "	-16%			
K "	4%			

84. Serge Island—Serge—Derry 1					Control	NP	NK	PK
					256	310	238	204
	N Effect	..	..	..	19%			
	P "	..	..	..	4%			
	K "	..	..	..	-21%			
85. Serge Island—Serge—Duckworth 1					Control	NP	NK	PK
					227	248	266	232
	N Effect	..	..	..	12%			
	P "	..	..	..	-3%			
	K "	..	..	..	5%			
86. Serge Island—Serge—Race Course 1					Control	NP	NK	PK
					217	259	217	378
	N Effect	..	..	..	-20%			
	P "	..	..	..	47%			
	K "	..	..	..	25%			
Summary:					Control	NP	NK	PK
					1202	1310	1295	1265
	N Effect	..	..	..	6%			
	P "	..	..	..	3%			
	K "	..	..	..	2%			
	S.E. % g.m.	..	..	..	18.9			
87. Sevens—Parnassus—Sandy Gully 5 (Spring Plants)					Control	NP	NK	PK
					303	579	231	277
	N Effect	..	..	..	40%			
	P "	..	..	..	60%			
	K "	..	..	..	-42%			
88. Sevens—Parnassus—Sandy Gully 7					Control	NP	NK	PK
					474	216	326	227
	N Effect	..	..	..	-23%			
	P "	..	..	..	-44%			
	K "	..	..	..	-20%			
89. Sevens—Parnassus—Sandy Gully 9					Control	NP	NK	PK
					421	252	399	301
	N Effect	..	..	..	-10%			
	P "	..	..	..	-33%			
	K "	..	..	..	4%			
Summary:					Control	NP	NK	PK
					1198	1047	956	805
	N Effect	..	..	..	0%			
	P "	..	..	..	-14%			
	K "	..	..	..	-22%			
	S.E. % g.m.	..	..	..	40.5			
90. Vale Royal—Swanswick—Bamboo Walk (Co331)					Control	NP	NK	PK
					213	192	237	235
	N Effect	..	..	..	-4%			
	P "	..	..	..	-5%			
	K "	..	..	..	17%			
91. Vale Royal—Swanswick—Grey 6 (B4362)					Control	NP	NK	PK
					338	190	208	262
	N Effect	..	..	..	-34%			
	P "	..	..	..	-17%			
	K "	..	..	..	-12%			

92. Vale Royal—Swanswick—Guava Walk (Co331)									
					Control	NP	NK	PK	
					144	210	134	153	
N	Effect	..	..	..	14%				
P	"	..	..	..	31%				
K	"	..	..	..	-19%				
93. Vale Royal—Swanswick—Hampshire Yard (Co331)									
					Control	NP	NK	PK	
					321	281	159	242	
N	Effect	..	..	..	-22%				
P	"	..	..	..	9%				
K	"	..	..	..	-33%				
94. Vale Royal—Swanswick—Hog Sty (Co331)									
					Control	NP	NK	PK	
					147	193	214	205	
N	Effect	..	..	..	16%				
P	"	..	..	..	10%				
K	"	..	..	..	23%				
95. Vale Royal—Swanswick—Small Wire (B41227)									
					Control	NP	NK	PK	
					181	185	135	184	
N	Effect	..	..	..	-12%				
P	"	..	..	..	17%				
K	"	..	..	..	-13%				
Summary:					Control	NP	NK	PK	
					1704	1631	1543	1701	
N	Effect	..	..	..	- 6%				
P	"	..	..	..	2%				
K	"	..	..	..	- 2%				
S.E. % g.m.					21.3				

PART 3

RESULTS OF VARIETY EXPERIMENTS

A summary of the results of the variety experiments reaped in 1958 is presented below. Actual yields in tons cane per acre, % sucrose (or pol % cane*) and tons sugar per acre (or tons pol per acre*) obtained by the standard variety, are quoted, and the yields obtained from the other varieties are expressed as a percentage of the standard.

COMPARISON OF COMMERCIAL VARIETIES HIGH RAINFALL AREAS

Variety	CANE				POL % CANE* OR SUCROSE				POL* OR SUGAR			
	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.
1. Frome—Belle Isle—Meylersfield—Butchers Clump (spring planted 1955)												
B37161 ..	..	21.4	31.4	37.7	13.4	12.2	13.9		2.9	3.8	5.3	
B41227 ..	..	125	128	120	106	109	99		133	140	123	
B42231 ..	..	114	109	103	98	111	98		111	122	105	
B4362 ..	..	130	117	109	100	117	94		131	137	115	
S.E. % g.m.	..	4.4	13.1	7.4	5.1	3.0	8.8		8.6	12.3	10.0	
Sig. Diff. ..	..	9.0	—	—	—	4.8	—		17.7	26.5	—	
2. Frome—Shrewsbury—Shrewsbury—Top Cabbage (spring planted 1955)												
B37161 ..	..	30.5	34.3	29.3	13.9	12.8	13.1		4.2	4.4	3.8	
B41227 ..	..	113	121	133	89	99	106		100	120	125	
B42231 ..	..	89	104	106	105	103	99		93	108	107	
B4362 ..	..	118	109	108	108	113	92		128	122	117	
S.E. % g.m.	..	6.3	7.8	4.6	3.1	5.3	2.6		7.1	8.8	4.6	
Sig. Diff. ..	..	11.5	14.6	2.6	5.4	—	0.4		13.0	—	0.3	
3. Frome—Masemore—Retrieve—Jeyes (8 x 4 R. B. Variety trial) (spring plants)												
B41227 ..	..	44.6			13.8				6.2			
B4362 ..	..	105			99				106			
B49119 ..	..	102			106				97			
B49198 ..	..	101			145				72			
B49396 ..	..	85			99				86			
B5037 ..	..	87			93				93			
B52405 ..	..	86			93				92			
B52407 ..	..	89			103				86			
S.E. % g.m.	..	10.9			11.9				12.1			
Sig. Diff. ..	..	6.7			1.3				1.0			
4. Frome—Blackheath—Mingo (8 x 4 R. B. Variety trial) (Spring plants)												
B41227 ..	..	35.6			12.7				4.6			
B4362 ..	..	82			91				90			
B49119 ..	..	103			113				93			
B49198 ..	..	98			131				78			
B49396 ..	..	93			100				93			
B5037 ..	..	98			93				105			
B52405 ..	..	102			101				104			
B52407 ..	..	112			159				70			
S.E. % g.m.	..	6.1			12.0				12.8			
Sig. Diff. ..	..	3.2			1.6				0.8			

DRY NORTH COAST

Variety	CANE			POL % CANE* OR SUCROSE			POL* OR SUGAR		
	P.	1st R.	2nd R.	P.	1st R.	2nd R.	P.	1st R.	2nd R.

5. Long Pond—Long Pond—Brown Piece (fall planted 1954)

B42231	95	84	94	117	96	119	111	81	113
B49396	80	83	70	103	104	113	83	86	79
BJ235 (B52405)	96	99	86	97	94	112	94	93	96
BJ443 (B52408)	97	89	70	87	76	103	84	68	72
Co331	48.8	44.1	29.5	8.1	11.9	11.5	3.9	5.2	3.4
Co421	82	84	81	98	89	108	80	75	88
S.E. % g.m. ..	9.6	9.2	10.8	13.6	8.7	4.7	17.6	10.8	
Sig. Diff. ..	12.6	10.9	10.8	—	10.6	6.2	19.7	12.0	

6. Long Pond—Long Pond—Old House (fall planted 1954)

B37161	35.5	26.6	23.3	10.8	11.0	14.1	3.1	2.9	3.2
B37172	112	102	96	104	109	108	116	113	105
B42231	93	84	85	117	118	109	109	101	93
B49198	134	126	126	79	106	103	105	134	130
BJ64 (B52402)	60	71	69	96	106	106	59	75	75
May336	66	79	63	121	127	116	80	101	74
S.E. % g.m. ..	11.1	14.9	19.4	9.7	8.0	1.4	13.6	20.5	19.5
Sig. Diff. ..	13.9	18.3	22.3	13.1	11.7	1.9	16.9	28.0	23.9

Variety	CANE				POL % CANE* OR SUCROSE				POL* OR SUGAR			
	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.	P.	1st R.	2nd R.	3rd R.

7. Rose Hall—Calabash II (spring planted 1954)

B3439	24.6	22.6	16.7	—	—	19.4	15.3	—	—	4.4	2.6	—
B37161	100	115	116	—	—	98	103	—	—	112	119	—
B41227	142	175	166	28.7	—	102	105	12.6	—	175	175	3.7
B4362	121	153	138	65	—	115	110	109	—	175	152	71
Co331	126	162	153	103	—	95	98	97	—	151	150	100
Co421	131	136	121	73	—	95	101	106	—	129	123	78
S.E. % g.m. ..	12.1	16.7	8.6	19.6	—	11.5	4.5	5.3	—	18.2	10.5	23.4
Sig. Diff. ..	17.4	30.9	13.7	20.2	—	—	5.6	—	—	33.6	17.1	25.0

LATTICE TRIALS—PLANTS

TABLE II

BJ54's

Varieties	CANE				SUCROSE				SUGAR						
	North Coast	Irrigated		Central	North Coast	Irrigated		Central	North Coast	Irrigated		Central			
Estates and Fields	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
B41227	39-71	—	—	—	111	10-47	—	—	—	105	4-26	—	—	—	116
B42231	—	39-99	—	—	—	—	—	—	—	—	—	—	—	—	—
B4362	—	85	—	63-45	37-12	—	—	—	10-4	15-14	—	—	—	6-56	5-45
B52107	—	—	—	127	—	—	—	—	97	—	—	—	—	124	—
B53348	88	—	—	—	—	113	—	—	—	—	95	—	—	—	—
B15401	76	58	—	—	51	98	—	—	—	86	72	—	—	—	43
B15402	70	100	—	93	91	87	—	—	79	85	59	—	—	74	84
B15403	67	—	—	104	65	80	—	—	85	72	52	—	—	90	43
B15404	63	44	—	—	87	84	—	—	—	87	50	—	—	—	72
B15405	72	84	—	—	69	106	—	—	—	97	73	—	—	—	70
B15407	79	35	—	98	74	100	—	—	93	92	78	—	—	91	67
B15408	56	101	—	93	51	94	—	—	84	94	52	—	—	79	46
B15409	84	111	—	122	—	104	—	—	84	—	85	—	—	104	—
B15412	91	135	—	142	74	101	—	—	84	105	89	—	—	120	79
B15414	71	84	—	—	82	79	—	—	—	84	54	—	—	—	71
B15416	75	56	—	—	43	89	—	—	—	80	63	—	—	—	37
B15417	—	106	—	—	94	—	—	—	—	94	—	—	—	—	93
B15418	69	71	—	—	55	82	—	—	—	85	58	—	—	—	50
B15419	75	—	—	—	—	85	—	—	—	—	60	—	—	—	—
B15420	91	99	—	122	96	90	—	—	85	86	79	—	—	104	82
B15421	77	—	—	105	78	97	—	—	79	78	69	—	—	83	61
B15422	78	—	—	112	93	113	—	—	94	104	33	—	—	107	100
B15423	65	99	—	99	86	95	—	—	92	82	55	—	—	92	70
B15424	53	112	—	110	—	82	—	—	84	—	53	—	—	93	—
B15425	—	—	—	—	77	—	—	—	—	97	—	—	—	—	74
B15426	—	94	—	93	—	—	—	—	76	—	—	—	—	72	—
B15428	—	—	—	—	85	—	—	—	—	81	—	—	—	—	64
B15429	—	—	—	—	98	—	—	—	—	82	—	—	—	—	74
B15430	71	89	—	107	64	83	—	—	91	80	59	—	—	97	55
B15431	75	94	—	116	74	88	—	—	89	91	65	—	—	104	68
B15434	—	55	—	100	—	—	—	—	85	—	—	—	—	70	—
B15435	—	61	—	98	—	—	—	—	91	—	—	—	—	89	—
B15436	60	62	—	94	59	64	—	—	90	95	37	—	—	86	58
B15437	75	65	—	—	76	69	—	—	—	78	53	—	—	—	65
B15438	73	69	—	—	68	102	—	—	—	94	72	—	—	—	67
B15439	68	66	—	—	78	96	—	—	—	91	62	—	—	—	68
B15440	93	103	—	—	65	66	—	—	—	69	50	—	—	—	48
B15441	72	91	—	—	88	66	—	—	82	48	—	—	—	—	77
B15442	79	77	—	112	68	86	—	—	89	94	66	—	—	101	69
B15443	78	88	—	129	64	72	—	—	83	72	54	—	—	107	46
B15444	87	38	—	84	79	99	—	—	88	99	33	—	—	74	82
B15445	72	94	—	100	76	93	—	—	88	82	63	—	—	89	67
B15446	—	—	—	—	86	—	—	—	—	97	—	—	—	—	87
B15447	69	87	—	116	—	63	—	—	85	—	44	—	—	103	—
B15448	59	122	—	126	92	99	—	—	82	89	59	—	—	104	86
B15449	57	49	—	—	57	104	—	—	—	89	59	—	—	—	53
B15450	69	80	—	—	69	98	—	—	—	86	65	—	—	—	61
B15451	73	47	—	—	63	111	—	—	—	99	77	—	—	—	66
B15452	62	55	—	—	—	100	—	—	—	—	64	—	—	—	—
B15453	90	108	—	—	—	70	—	—	—	—	61	—	—	—	—
B15454	—	—	—	128	—	—	—	—	78	—	—	—	—	102	—
B15455	77	99	—	139	58	90	—	—	97	90	69	—	—	135	53
B15456	—	80	—	122	98	—	—	—	80	82	—	—	—	98	87
B15457	88	—	—	—	85	94	—	—	—	91	78	—	—	—	77
B15458	—	—	—	—	41	—	—	—	—	68	—	—	—	—	35
B15459	—	100	—	—	41	—	—	—	—	92	—	—	—	—	43
B15460	—	103	—	—	87	—	—	—	—	90	—	—	—	—	78
B15461	72	59	—	—	81	108	—	—	—	98	73	—	—	—	84
B15462	60	112	—	106	106	92	—	—	91	87	52	—	—	96	96
B15463	75	119	—	126	87	89	—	—	92	82	66	—	—	117	82
B15465	56	104	—	101	71	87	—	—	88	84	47	—	—	89	59
B15466	—	—	—	—	80	—	—	—	—	90	—	—	—	—	78
B15470	—	69	—	—	—	—	—	—	—	—	—	—	—	—	—
B52158	—	—	—	124	—	—	—	—	—	94	—	—	—	—	114
B52162	—	—	—	111	—	—	—	—	—	86	—	—	—	—	96
B52256	—	—	—	108	—	—	—	—	—	80	—	—	—	—	86
B52313	—	—	—	136	—	—	—	—	—	100	—	—	—	—	137
B52389	—	—	—	156	—	—	—	—	—	89	—	—	—	—	141
Co 351	93	—	—	—	—	96	—	—	—	—	88	—	—	—	—
D62/43	79	—	—	—	—	96	—	—	—	—	76	—	—	—	—
Pepe Cuca	63	—	—	—	—	104	—	—	—	—	61	—	—	—	—
PR 902	69	—	—	—	—	105	—	—	—	—	72	—	—	—	—
4/247	—	59	—	—	—	—	—	—	—	—	—	—	—	—	—
S.E. % g.m. ..	6-8	18-3	—	17-0	10-95	8-9	—	—	7-0	2-55	12-97	—	—	16-8	14-7
Sig. diff. at 5% ..	9-5	21-1	—	31-2	11-7	15-4	—	—	10-1	3-17	16-10	—	—	27-3	14-2

1. ROSE HALL—Orange Valley—Hot House. L

2. BERNARD LODGE—Congreve Park 15. L

4. NEW YARMOUTH—Caswell Hill 19. L

5. WORTHY PARK—Fig Tree 2. M

H = Heavy Soil

M = Medium Soil

L = Light Soil

LATTICE TRIALS—PLAN

TABLE I—B52's AND 4th.

Estates and Fields	CANE											SUCROSE						
	N. Coast		Wet East		Central	Irrigated					Wet West	N. Coast		Wet East		Central		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	
B37161 ..	—	—	—	—	—	—	—	82	—	—	—	—	—	—	—	—	—	—
B37172 ..	—	—	—	(31.4)	—	—	—	—	—	—	—	—	—	—	(15.3)	—	—	—
B41227 ..	—	—	(46.2)	—	127	(72.4)	108	65 (82.4)	(65.9)	(52.1)	(33.2)	—	—	(10.8)	—	84	(9.19)	—
B42231 ..	—	—	—	—	—	—	—	78	—	—	—	—	—	—	—	—	—	—
B4362 ..	(23.6)	(20.7)	—	112	(45.1)	—	(49.2)	89	—	85	101	—	(9.1)	—	89	(13.1)	—	(9.1)
B49119 ..	243	137	110	—	—	—	—	89	—	—	—	—	109	83	—	—	—	—
B5121 ..	—	—	—	—	—	—	—	99	—	—	—	—	—	—	—	—	—	—
B5126 ..	—	—	—	—	—	—	—	89	—	—	—	—	—	—	—	—	—	—
B5142 ..	—	—	—	—	—	—	—	76	—	—	—	—	—	—	—	—	—	—
B51129 ..	173	88	—	131	107	—	91	—	—	68	90	—	113	—	100	105	—	—
B51134 ..	—	—	—	—	—	—	—	76	—	—	—	—	—	—	—	—	—	—
B51156 ..	—	—	—	—	—	—	—	105	—	—	—	—	—	—	—	—	—	—
B51360 ..	—	—	—	—	—	—	—	107	—	—	—	—	—	—	—	—	—	—
B51374 ..	—	—	—	—	—	—	—	98	—	—	—	—	—	—	—	—	—	—
B5235 ..	172	113	92	103	123	—	88	94	89	—	96	—	109	86	85	98	—	7
B5277 ..	—	79	—	—	—	—	—	—	—	—	115	—	117	—	—	—	—	—
B52107 ..	182	75	96	105	111	—	104	92	109	—	89	—	99	84	89	91	—	10
B52158 ..	153	74	85	94	120	—	85	75	62	—	90	—	105	86	78	81	—	7
B52163 ..	154	58	70	118	123	—	100	77	90	—	92	—	109	87	85	90	—	8
B52242 ..	128	—	77	105	104	—	82	—	—	70	93	—	—	86	80	79	—	7
B52253 ..	168	—	67	96	110	—	91	62	—	68	101	—	—	98	84	84	—	8
B52256 ..	210	98	74	92	105	—	86	66	81	—	81	—	85	87	74	80	—	7
B52257 ..	236	70	87	107	104	—	96	78	93	—	92	—	110	86	85	92	—	8
B52298 ..	164	106	82	95	106	—	92	—	—	—	—	—	92	68	84	88	—	8
B52306 ..	169	87	92	84	112	—	106	83	83	—	103	—	85	69	89	75	—	9
B52313 ..	244	98	94	107	115	—	111	96	97	—	88	—	102	87	94	98	—	11
B52315 ..	135	75	74	111	110	—	106	91	95	—	107	—	70	83	89	78	—	7
B52316 ..	195	65	63	117	109	—	95	87	89	—	110	—	88	67	79	61	—	6
B52321 ..	168	71	89	89	109	—	92	—	—	85	102	—	91	75	95	80	—	8
B52341 ..	167	69	73	106	85	—	75	—	—	70	82	—	102	93	77	76	—	7
B52371 ..	209	82	92	96	—	—	89	66	92	—	96	—	113	71	83	75	—	7
B52389 ..	128	97	92	105	129	—	103	91	92	—	117	—	94	87	84	65	—	8
B52405 ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
B52407 ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
B52408 ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
B52409 ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3/8 ..	—	—	—	—	—	—	—	78	—	—	—	—	—	—	—	—	—	—
3/21 ..	—	—	—	—	—	—	—	99	—	—	—	—	—	—	—	—	—	—
3/99 ..	—	—	—	—	—	—	—	69	—	—	—	—	—	—	—	—	—	—
3/114 ..	—	—	—	—	—	—	—	73	—	—	—	—	—	—	—	—	—	—
3/176 ..	—	—	—	—	—	—	—	83	—	—	—	—	—	—	—	—	—	—
3/214 ..	—	—	—	—	—	—	—	70	—	—	—	—	—	—	—	—	—	—
3/287 ..	—	—	—	—	—	—	—	72	—	—	—	—	—	—	—	—	—	—
3/311 ..	—	—	—	—	—	—	—	65	—	—	—	—	—	—	—	—	—	—
3/343 ..	—	—	—	—	—	—	—	97	—	—	—	—	—	—	—	—	—	—
3/357 ..	—	—	—	—	—	—	—	54	—	—	—	—	—	—	—	—	—	—
3/437 ..	—	—	—	—	—	—	—	91	—	—	—	—	—	—	—	—	—	—
3/464 ..	—	—	—	—	—	—	—	66	—	—	—	—	—	—	—	—	—	—
4/50 ..	143	76	86	124	93	75	100	—	—	60	86	—	78	88	78	73	90	8
4/52 ..	176	69	—	98	93	—	92	—	—	69	91	—	98	—	82	77	—	7
4/61 ..	202	92	—	113	106	—	97	—	—	87	99	—	71	—	64	59	—	7
4/66 ..	—	73	—	109	100	—	91	—	—	72	80	—	101	88	90	—	10	
4/115 ..	210	101	—	108	115	—	86	—	—	84	91	—	—	83	99	—	8	
4/164 ..	—	—	—	81	83	—	90	—	—	—	85	—	—	72	89	—	8	
4/170 ..	98	87	77	120	106	96	92	—	—	79	102	—	101	78	82	71	87	8
4/172 ..	—	—	—	102	—	—	—	—	—	—	—	—	—	—	94	—	—	—
4/179 ..	81	64	72	109	93	77	102	—	—	79	100	—	102	89	93	83	93	8
4/182 ..	144	77	—	96	100	—	76	—	—	75	79	—	87	—	84	97	—	7
4/202 ..	116	73	93	98	93	—	82	—	—	74	82	—	95	81	77	74	—	7
4/212 ..	181	71	81	98	125	83	84	83	—	67	89	—	82	76	83	70	82	—
4/222 ..	130	64	60	113	122	67	91	—	—	80	100	—	105	69	91	101	85	10
4/229 ..	194	73	77	121	106	77	93	90	—	73	96	—	98	74	79	96	91	9
4/247 ..	—	81	—	97	99	—	72	—	—	69	95	—	94	—	88	95	—	9
4/268 ..	58	70	—	94	106	72	75	—	—	65	103	—	112	—	88	86	95	8
4/270 ..	91	—	—	—	67	—	—	—	—	—	—	—	—	—	—	—	83	—
4/272 ..	149	79	76	—	104	83	92	—	—	84	65	—	117	105	—	85	91	8
4/299 ..	175	74	—	114	89	—	93	—	—	85	97	—	91	—	87	89	9	9
4/313 ..	202	76	96	84	75	76	57	75	—	66	84	—	83	60	81	71	68	7
4/315 ..	180	69	48	77	71	78	34	61	—	40	107	—	69	62	83	83	64	7
4/338 ..	148	67	—	—	66	—	—	—	—	—	—	—	94	—	—	—	75	—
4/339 ..	—	59	—	85	53	75	75	—	—	78	76	—	109	—	89	111	102	9
4/351 ..	167	80	75	105	79	88	96	84	—	82	74	—	82	84	80	68	78	9
4/352 ..	125	—	66	110	71	79	84	35	—	61	98	—	—	117	88	78	104	10
4/387 ..	160	87	78	83	113	73	109	—	—	73	114	—	112	103	95	79	95	9
4/402 ..	—	—	—	—	74	—	—	—	—	—	—	—	—	—	—	—	102	—
4/405 ..	114	78	—	90	85	58	71	—	—	67	73	—	111	—	89	97	78	8
4/420 ..	156	81	—	110	93	—	97	—	—	83	131	—	104	—	69	71	—	7
4/423 ..	—	—	—	—	85	—	—	—	—	—	—	—	—	—	—	—	96	—
4/426 ..	138	75	52	97	92	74	88	—	—	62	86	—	77					

11. FROME—Midgham—Bennett, M
 Figures in brackets= Standards
 H = Heavy soil
 M = Medium Soil
 L = Light soil

LATTICE TRIALS—PLANTS
TABLE III

B53's AND FOREIGN VARIETIES

[illegible]

1. LONG POND—Parassus 6. M
2. VALE ROYAL—Breeze Mill Common. M
3. HOLLAND—Top Hill. H
4. JAMAICA SUGAR ESTATES—Duckenfield 13—2 year growing season. M
5. CAYMANAS—Cow Park—Riverside. L
6. MONYMUSK—Exeter 19. H

1. LONG POND—Parnassus 6. M
2. VALE ROYAL—Breeze Mill Common. M
3. HOLLAND—Top Hill. H
4. JAMAICA SUGAR ESTATES—Duckenfield 13—2 year growing season. M
5. CAYMANAS—Cow Park—Riverside. L
6. MONYMUISK—Exeter 19. H

7. NEW YARMOUTH—Section 32. M
8. UNITED ESTATES—Race Course 1, H
Figures in brackets = Standards
H = Heavy soil
M = Medium Soil
L = Light soil

LATTICE TRIALS—PLANTS

TABLE IV

B54's AND FOREIGN

Estates and Fields	WET EAST—Medium soil		
	RICHMOND/LLANDOVERY—Brady Piece		
	Varieties	Cane	Sucrose
			Sugar
B41227	(49·5)	(8·34)	(4·19)
B4362	86	103	87
B53200	103	105	108
B5401	67	118	81
B5463	85	88	72
B5480	87	121	106
B5490	88	99	86
B54142	75	111	81
B54172	59	72	43
B54193	112	90	103
B54262	112	96	107
B54281	68	104	79
BJ5413	80	110	87
BJ5425	81	120	97
BJ5428	98	100	98
BJ5429	82	92	73
BJ5446	88	117	103
CP34/120	71	119	81
CP36/105	80	132	103
CP36/111	85	104	85
CP44/154	94	109	102
Q47	102	111	110
Q50	77	104	80
Q56	41	62	25
Q57	64	109	72
S.E. % g.m.	12·6	17·3	23·6
Sig. Diff. at 5%	17·6	30·1	34·4

TABLE V

BJ49's, 50's AND 2ND 500

Varieties		CANE																			
		North Coast						Wet West						Wet East				Irrigated			
Estates and Fields		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
B37161	..	—	—	(23·0)	(16·9)	—	—	—	—	(23·5)	—	—	—	—	—	—	—	—	—	—	—
B37172	..	—	—	96	—	—	—	—	—	—	—	—	—	—	(30·4)	(36·8)	—	—	—	—	—
B41227	..	(28·3)	—	—	—	—	(29·7)	(15·6)	(26·4)	137	(44·6)	(35·6)	(24·2)	(41·2)	148	93	(47·2)	(70·1)	(74·4)	(19·3)	(40·4)
B42231	..	—	(27·7)	85	—	—	—	—	90	—	—	—	128	86	—	—	121	—	—	150	99
B4362	..	109	—	—	—	—	98	142	120	139	105	82	145	88	148	84	112	86	—	163	104
B49119	..	121	—	—	283	186	110	190	117	144	102	103	114	111	167	77	143	96	113	211	87
B49198	..	94	—	126	212	101	101	167	119	128	101	98	117	86	125	91	103	80	90	182	104
B49353	..	86	—	—	111	112	88	145	97	127	—	—	119	90	105	76	86	83	99	172	103
B49396	..	60	70	—	193	107	92	119	96	117	85	93	86	83	120	45	105	83	93	141	86
B5037	..	63	—	—	236	114	89	81	105	107	87	98	69	87	138	59	101	74	91	165	100
B5041	..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94	—	—	—
B50347	..	97	—	—	210	141	86	157	120	115	—	—	112	70	121	—	101	73	93	128	108
B52405	..	82	86	—	235	141	98	148	117	123	86	102	95	96	98	79	123	85	105	187	118
B52407	..	105	—	—	203	104	108	169	—	—	89	112	—	88	151	90	102	88	93	—	—
B52408	..	—	70	—	220	136	—	—	—	—	—	—	—	—	—	—	—	—	95	—	—
B52409	..	—	—	—	232	136	104	—	112	120	—	—	114	95	—	72	96	83	102	141	90
Co331	..	102	100	—	(27·8)	87	87	182	—	—	—	—	—	—	—	—	—	—	—	—	—
Co421	..	—	81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
HH37/1933	..	113	—	—	164	136	—	144	110	148	—	—	152	—	144	101	—	—	99	164	85
May 336	..	—	—	63	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
NCo310	..	61	—	—	232	169	81	152	124	113	—	—	125	90	151	51	125	96	107	155	103
2/64	..	—	—	69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S.E. % g.m.	..	16·2	10·8	19·4	15·7	10·7	10·5	13·5	17·3	9·6	10·9	6·1	18·6	13·3	14·5	21·7	14·2	7·8	13·1	13·9	10·2
Sig. Diff. at 5%	..	21·7	10·8	22·3	44·7	20·1	14·6	28·6	—	17·3	6·7	3·2	30·6	—	27·7	24·6	22·4	9·8	—	31·9	14·6
1. Long Pond—Venture 2 M 2. Long Pond—Brown Piece, 2nd R. M 3. Long Pond—Old House, 2nd R. M 4. Long Pond—Pond Piece M 5. Hampden—Hitler 3 L 6. Rose Hall—Orange Valley—Starapple 1. L 7. Vaie Royal—Arcadia—Top Lazy Ground M 8. Appleton—Big Run 4 H 9. Earnett—Bogue 1. H 10. Frome—Masemure—Jeyes 11. Frome—Blackheath—Mingo 12. Holland—Canoe Pond H 13. Richmond/Llandovery—Barracks 2. M 14. Gray's Inn Central Factory—Lady Hole M 15. Serge Island—April Piece L 16. Bernard Lodge—Half-Way-Tree 10 L 17. Monymusk—Hillside—Great House L 18. New Yarmouth—Section 25 M 19. Sevens—Parnassus 58 H 20. United Estates—Windsor Park 6 H H = Heavy soil M = Medium soil L = Light soil Figures in brackets—Standards																					

1. Long Pond—Venture 2 M
2. Long Pond—Brown Piece, 2nd R. M
3. Long Pond—Old House, 2nd R. M
4. Long Pond—Pond Piece M
5. Hampden—Hitler 3 L
6. Rose Hall—Orange Valley—Starapple 1. L
7. Vale Royal—Arcadia—Top Lazy Ground M
8. Appleton—Big Run 4 H
9. Barnett—Bogue 1. H

10. Frome—Masemure—Jeyes H
11. Frome—Blackheath—Mingo H
12. Holland—Canoe Pond H
13. Richmond/Llandovery—Barracks 2. M
14. Gray's Inn Central Factory—Lady Hole M
15. Serge Island—April Piece L
16. Bernard Lodge—Half-Way-Tree 10 L
17. Monymusk—Hillside—Great House L
18. New Yarmouth—Section 25 M

19. Sevens—Parnassus 58 H
20. United Estates—Windor Park 6 H

H = Heavy soil
M = Medium soil
L = Light soil

Figures in brackets—Standards

FINAL TRIALS—PLANTS

TABLE V—continued

BJ49's, 50's AND 2ND 500

Varieties	SUCROSE																			
	North Coast								Wet West				Wet East			Irrigated				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Estates and Fields																				
B37161 ..	—	—	(14.1)	(11.4)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
B37172 —	—	—	108	—	—	—	—	—	—	—	—	—	—	—	(10.4)	(15.2)	—	—	—	—
B41227 ..	(9.72)	—	—	—	—	(10.8)	(7.3)	(13.5)	—	(13.8)	(12.7)	(11.8)	(8.1)	74	91	(7.8)	(6.8)	(10.3)	(12.1)	(9.2)
B42231 ..	—	(13.7)	109	—	—	—	—	108	—	—	—	111	113	—	—	127	—	—	93	112
B4362 —	110	—	—	—	—	127	105	115	—	99	91	106	117	114	99	136	99	—	115	134
B49119 ..	101	—	—	107	112	102	111	107	—	106	113	105	124	90	88	118	86	100	99	107
B49198 ..	81	—	103	94	85	68	76	100	—	145	131	73	90	80	87	82	58	88	65	74
B49353 ..	123	—	—	121	105	97	100	104	—	—	—	98	90	79	93	145	85	99	103	117
B49396 ..	112	113	—	109	103	109	98	96	—	99	100	106	101	77	87	76	78	96	104	113
B5037 ..	107	—	—	95	103	107	90	111	—	93	93	105	113	82	99	119	105	104	109	122
B5041 ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	65	—	—	—
B50347 ..	105	—	—	100	104	102	88	97	—	—	—	100	89	72	—	121	80	96	88	110
B52405 ..	99	112	—	90	107	90	81	107	—	93	101	106	93	75	94	126	86	95	110	88
B52407 ..	102	—	—	82	82	104	96	—	—	103	159	—	109	78	92	109	102	102	—	—
B52408 ..	—	103	—	91	110	—	—	—	—	—	—	—	—	—	—	—	—	88	—	—
B52409 ..	—	—	—	103	106	108	—	100	—	—	—	97	95	—	86	119	86	96	100	121
Co331 ..	100	100	—	—	(14.1)	98	78	—	—	—	—	—	—	—	—	—	—	—	—	—
Co421 ..	—	108	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
H37/1933 ..	106	—	—	109	107	—	106	103	—	—	—	93	—	79	92	—	—	88	95	102
May336 ..	—	—	116	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
NCc310 ..	109	—	—	119	120	106	85	112	—	—	—	125	139	72	99	126	97	105	110	127
2/64 ..	—	—	106	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S.E. % g.m. ..	6.2	4.7	1.4	11.4	4.7	8.9	18.0	3.5	—	11.9	12.0	12.1	17.4	10.7	8.2	12.2	15.2	6.9	7.4	13.3
Sig. Diff. at 5% ..	9.3	6.2	1.9	16.6	7.3	12.8	—	5.4	—	1.33	1.6	17.9	26.6	12.8	—	20.4	19.1	9.6	10.7	21.2

1. Long Pond—Venture 2 M
2. Long Pond—Brown Piece, 2nd R. M
3. Long Pond—Old House, 2nd R. M
4. Long Pond—Pond Piece M
5. Hampden—Hitler 3 I
6. Rose Hall—Orange Valley-Starapple 1. L
7. Vale Royal—Arcadia-Top Lazy Ground M
8. Appleton—Big Run 4 H
9. Barnett—Bogue 1. H
10. Frome—Masemure—Jeyes H
11. Frome—Blackheath—Mingo H
12. Holland—Canoe Pond H
13. Richmond/Llandovery—Barracks 2. M
14. Gray's Inn Central Factory—Lady Hole M
15. Serge Island—April Piece L
16. Bernard Lodge—Half-Way-Tree 10 L
17. Monymusk—Hillside—Great House L
18. New Yarmouth—Section 25 M
19. Sevens—Parnassus 58 H
20. United Estates—Windsor Park 6 H

H = Heavy soil
M = Medium soil
L = Light soil

Figures in brackets—Standards

TABLE V—continued
BJ 49's, 50's and 2ND 500

Varieties	SUGAR																			
	North Coast						Wet West						Wet East		Irrigated					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Estates and Fields																				
B37161 ..	—	—	(3-22)	(2-03)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
B37172 ..	—	—	105	—	—	—	—	—	—	—	—	—	—	(3-2)	(5-57)	—	—	—	—	—
B41227 ..	(2-76)	—	—	—	—	(3-23)	(1-23)	(3-59)	—	(6-17)	(4-6)	(2-79)	(3-36)	110,	85	(4-59)	(4-8)	(7-7)	(2-28)	(3-68)
B42231 ..	—	(3-8)	93	—	—	—	—	97	—	—	—	145	98	—	—	153	—	—	142	113
B4362 ..	120	—	—	—	—	122	145	138	—	106	90	157	101	173	83	150	85	—	191	141
B49119 ..	122	—	—	295	200	111	194	125	—	97	93	125	137	152	66	166	82	112	211	94
B49198 ..	74	—	130	192	86	69	122	118	—	72	78	86	76	99	80	86	47	80	123	79
B49353 ..	105	—	—	176	116	83	136	100	—	—	—	118	82	85	71	124	70	97	178	120
B49396 ..	67	79	—	201	102	101	113	90	—	86	93	96	81	92	39	80	62	90	148	98
B5037 ..	66	—	—	199	111	94	65	116	—	93	105	73	96	117	59	120	78	95	183	124
B5041 ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	61	—	—	—
B50347 ..	100	—	—	203	164	86	129	116	—	—	—	114	61	87	—	124	59	88	116	122
B52405 ..	91	96	—	222	150	87	115	125	—	92	104	101	88	70	74	154	72	101	209	107
B52407 ..	108	—	—	158	86	111	153	—	—	86	70	—	96	117	81	109	87	95	—	—
B52408 ..	—	72	—	199	149	—	—	—	—	—	—	—	—	—	—	—	—	84	—	—
B52409 ..	—	—	—	233	145	109	—	111	—	—	—	112	92	—	61	113	70	98	146	111
Co331 ..	110	100	—	—	(3-97)	85	128	—	—	—	—	—	—	—	—	—	—	—	—	—
Co421 ..	—	88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
H37/1933 ..	119	—	—	177	144	—	151	113	—	—	—	144	—	115	93	—	—	86	158	88
May336 ..	—	—	74	—	—	—	—	—	—	—	—	158	—	—	—	—	—	—	—	—
NCo310 ..	62	—	—	242	200	84	125	139	—	—	—	—	123	110	50	157	92	114	175	129
2/64 ..	—	—	75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S.E. % g.m.	14.1	17.6	19.5	25.0	10.1	14.1	26.0	17.7	—	12.1	12.8	24.1	19.6	16.8	21.8	18.5	18.1	16.1	15.5	6.6
Sig. Diff. at 5%	21.8	19.3	23.9	73.0	20.8	19.5	48.5	—	—	1.01	0.78	41.2	27.0	26.8	22.9	33.7	19.7	—	36.0	10.5

19. Sevens—Parnassus 58 H
20. United Estates—Windsor Park 6 H

1. Long Pond—Venture 2 M
2. Long Pond—Brown Piece, 2nd R. M
3. Long Pond—Old House, 2nd R. M
4. Long Pond—Pond Piece M
5. Hampden—Hitler 3 L
6. Rose Hall—Orange Valley—Starapple 1. L
7. Vale Royal—Arcadia—Top Lazy Ground M
8. Appleton—Big Run 4 H
9. Barnett—Bogue 1. H

10. Frome—Masemure—Jeyes H
11. Frome—Blackheath—Mingo H
12. Holland—Canoe Pond H
13. Richmond/Llandovery—Barracks 2. M
14. Gray's Inn Central Factory—Lady Hole M
15. Serge Island—April Piece L
16. Bernard Lodge—Half-Way—Tree 10 L
17. Monymusk—Hillside—Great House L
18. New Yarmouth—Section 25 M

H = Heavy soil
M = Medium soil
L = Light soil

Figures in brackets—Standards

PART 4
CULTIVATION EXPERIMENTS

1. Appleton—Raheen—Pimento Piece (B41227)

	CANE			SUCROSE			SUGAR		
	K	R	Mean	K	R	Mean	K	R	Mean
Spring Plants									
L ₀	36.5	95	35.2	15.8	103	16.0	5.8	97	5.6
L ₁	108	129	122	100	99	98	108	127	119
Mean	37.6	107	—	15.8	101	—	6.0	107	—
S.E. % g.m. ..		12.8			6.1			15.1	
Sig. Diff.		Lime	Knifing		Lime	Knifing		Lime	Knifing
		12.4	—		—	—		14.6	—
1st Ratoons									
L ₀	29.0	92	27.6	13.0	98	12.8	3.8	90	3.5
L ₁	95	89	95	94	98	97	88	87	92
Mean	28.8	90	—	12.6	101	—	3.5	94	—
S.E. % g.m. ..		9.9			7.5			8.8	
Sig. Diff.		Lime	Knifing		Lime	Knifing		Lime	Knifing
		—	—		—	—		7.2	—
2nd Ratoons									
L ₀	28.7	112	30.4	15.1	98	15.0	4.3	110	4.6
L ₁	112	113	106	93	97	96	104	111	102
Mean	30.4	106	—	14.6	101	—	4.3	111	—
S.E. % g.m. ..		10.8			5.0			11.0	
Sig. Diff.		9.7	—		4.3	—		—	—

L₀ = No lime applied.
K = Cross knifing.

L₁ = Lime applied at 20 tons marl/acre.
R = Cross ripping.

2. Frome—Belle Isle—Meylersfield—Parkinson (B41227)

	CANE				SUCROSE				SUGAR			
	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
Spring Plants												
O	54.7	95	91	52.0	12.8	103	97	12.8	7.1	97	88	6.7
XR	100	93	88	98	96	94	96	96	97	88	85	94
XK	102	99	95	104	101	96	99	99	103	95	94	102
Mean	55.1	95	91	—	12.7	99	99	—	7.0	94	89	—
S.E. % g.m. ..	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff.	10.3	6.1	7.8		6.7	6.4	5.0		10.9	6.7	7.8	
	—	—	—		—	—	—		—	—	—	
1st Ratoons												
O	39.8	101	95	39.3	18.2	95	97	13.3	5.4	96	93	7.0
XR	105	103	92	101	101	98	103	106	106	101	94	104
XK	116	110	98	110	100	97	99	101	117	107	97	111
Mean	42.6	98	89	—	13.7	96	99	—	7.8	94	98	—
S.E. % g.m. ..	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff.	3.1	9.3	6.9		3.3	4.7	5.7		6.0	10.2	10.3	
	—	—	—		—	—	—		—	—	—	

H = Harrowing. O = No Crossing. S = Straight Cultivation. R = Ripping.
XR = Cross ripping. P = Cross cultivation. K = Knifing. XK = Cross knifing.

3. Frome—Belle Isle—Paul Island—Top Morass (By36s)

	CANE				SUCROSE				SUGAR			
	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
Spring Plants												
O	43.7	102	107	45.1	9.8	102	108	10.1	4.3	103	114	4.6
XR	97	108	101	99	107	98	107	101	103	105	108	99
XK	103	110	106	103	99	95	102	96	102	105	108	99
Mean	43.7	107	105	—	10.0	96	104	—	4.4	103	108	—
S.E. % g.m. ..	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff.	5.2	2.4	1.9		4.1	6.2	9.7		11.0	8.1	11.1	
	—	—	—		4.8	—	—		—	—	—	

	CANE				SUCROSE				SUGAR			
	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
1st Ratoons												
O	41.4	108	109	54.7	13.2	100	99	13.2	6.9	107	107	7.3
XR	103	111	105	101	96	93	91	94	99	103	96	95
XX	104	102	108	99	98	98	101	99	102	99	109	98
Mean	53.0	104	105	—	13.0	99	99	—	6.9	103	104	—
S.E. % g.m.	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff. ..	6.0	5.5	5.6		7.3	6.5	7.1		5.9	9.7	9.5	
	—	—	—		—	—	—		—	—	—	
2nd Ratoons												
O	41.0	114	108	43.8	13.7	98	95	13.3	5.6	110	103	5.8
XR	106	111	105	101	99	90	97	97	105	99	102	98
XX	109	111	106	102	99	98	99	101	108	108	104	103
Mean	43.2	106	101	—	13.6	96	98	—	5.9	99	100	—
S.E. % g.m.	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
	10.0	7.8	8.2		6.9	5.6	3.8		11.4	6.3	9.9	

H = Harrowing. O = No crossing. S = Straight cultivation. R = Ripping.
 XR = Cross ripping. P = Cross cultivation. K = Knifing. XK = Cross knifing.

4. Frome—Masemure—Masemure—Belle Piece (B41227)

	CANE				SUCROSE				SUGAR			
	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
Spring Plants												
O	40.0	99	99	38.5	11.9	102	103	12.1	4.8	91	102	4.7
XR	94	93	100	99	103	92	98	96	96	85	97	95
XX	98	95	100	101	92	93	105	105	91	89	103	97
Mean	38.8	95	102	—	11.7	98	104	—	4.6	92	105	—
S.E. % g.m.	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff. ..	10.7	4.8	7.3		7.7	12.9	10.8		14.0	11.8	13.9	
	—	—	—		—	—	—		—	—	—	
1st Ratoons												
O	51.4	87	97	48.7	12.6	98	98	3.5	6.5	85	95	6.1
XR	94	91	102	101	93	98	97	4.1	87	89	98	98
XX	101	96	95	103	99	99	98	4.9	100	95	93	103
Mean	50.7	93	99	—	12.2	101	101	—	6.2	94	100	—
S.E. % g.m.	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff. ..	6.8	17.6	7.9		3.5	4.1	4.9		6.1	15.9	10.0	
	—	—	—		—	—	—		—	—	—	
2nd Ratoons												
O	39.6	91	102	38.7	12.0	102	97	11.9	4.7	93	100	4.7
XR	94	105	111	106	100	99	95	98	98	94	104	104
XX	102	108	109	109	99	97	97	97	97	102	106	107
Mean	39.1	103	109	—	11.9	100	97	—	4.7	102	105	—
S.E. % g.m.	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff. ..	6.8	17.6	7.9		3.9	8.0	6.0		18.3	9.4	11.9	
	—	—	—		—	—	—		—	—	—	

H = Harrowing. O = No crossing. S = Straight cultivation. R = Ripping.
 XR = Cross ripping. P = Cross cultivation. K = Knifing. XK = Cross knifing.

5. Frome—Frome—Fontabelle—Morass 12 (B4362)

	CANE				SUCROSE				SUGAR			
	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
Spring Plants												
O	40.8	104	104	41.8	12.4	98	97	12.2	5.1	101	101	5.1
XR	109	117	113	110	97	100	91	98	106	118	107	109
XX	105	118	109	108	96	97	100	99	101	115	109	107
Mean	42.7	108	104	—	12.1	100	98	—	5.2	108	103	—
S.E. % g.m.	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff. ..	6.6	9.0	5.7		7.0	9.6	11.1		9.6	15.3	12.8	
	—	—	—		—	—	—		—	—	—	

	CANE				SUCROSE				SUGAR			
	H	R	K	Mean	H	R	K	Mean	H	R	K	Mean
1st Ratoons												
O	34.7	116	98	36.4	13.0	95	94	12.5	4.5	110	93	4.5
XR	105	113	109	104	96	96	101	101	101	108	110	105
XX	109	112	108	105	94	103	96	101	104	116	104	107
Mean	36.4	109	100	—	12.5	101	100	—	4.6	110	101	—
S.E. % g.m. ..	S.	P.	S.P.		S.	P.	S.P.		S.	P.	S.P.	
Sig. Diff. ..	10.2	8.7	4.7		7.6	6.3	5.5		10.2	6.5	7.4	

H = Harrowing. O = No crossing. S = Straight cultivation. R = Ripping.
 XR = Cross ripping. P = Cross cultivation. K = Knifing. XK = Cross knifing.

DRAW BED EFFECT

6. Frome—Belle Isle—Belle Isle—Morass (B4362)

	DISTANCE FROM INTERVAL IN CHAINS				S.E. % g.m.	Sig. Diff.
	1	2	3	4		
Spring Plants						
Cane	44.7	88	85	89	2.2	6.4
1st Ratoons						
Cane	35.0	99	92	104	5.7	—
Sucrose	14.4	103	102	95	3.2	—
Sugar	5.1	99	92	100	7.1	—

7. Frome—Belle Isle—Meylersfield—Parkinson (B41227)

	1	2	3	4		
Spring Plants						
Cane	53.0	94	91	88	7.7	—
1st Ratoons						
Cane	46.3	103	95	106	5.6	—
Sucrose	13.8	97	101	102	0.8	2.5
Sugar	6.4	100	95	107	6.2	—

8. Frome—Belle Isle—Paul Island—Allman Piece (B41227)

	1	2	3	4		
Spring Plants						
Cane	51.3	95	92	86	1.6	4.8
1st Ratoons						
Cane	49.9	101	92	89	4.6	—
Sucrose	13.7	99	95	96	2.0	—
Sugar	6.9	98	84	83	5.9	—

9. Frome—Frome—Barham—Middle Ground (B4362)

	1	2	3	4		
Spring Plants						
Cane	49.1	92	92	83	7.0	12.0
1st Ratoons						
Cane	43.1	99	95	93	5.7	—
Sucrose	13.6	101	99	101	3.8	—
Sugar	5.9	99	94	93	2.8	—

10. Frome—Frome—Blue Castle—Guthrie Pen No. 2 (B41227)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	51.4	110	97	77	4.5	13.7
1st Ratoons								
Cane ..	..	..	33.4	127	127	125	4.7	18.0
Sucrose	..	..	12.2	94	106	100	0.4	—
Sugar	..	..	4.1	83	74	79	5.7	21.8

11. Frome—Frome—Fontabelle—Morass 20 (B4362)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	49.7	99	95	95	4.0	—
1st Ratoons								
Cane ..	..	..	44.9	101	94	107	2.7	—
Sucrose	..	..	12.3	99	104	105	7.0	—
Sugar	..	..	5.3	96	97	85	6.1	—

12. Frome—Frome—Frome—Cupid (B4362)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	51.5	97	97	93	9.3	—
1st Ratoons								
Cane ..	..	..	37.5	98	108	95	8.2	—
Sucrose	..	..	15.4	98	102	97	2.1	—
Sugar	..	..	5.8	104	91	107	4.2	—

13. Frome—Masemure—Albany—Curing House (B4362)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	50.1	88	89	91	2.4	7.0
1st Ratoons								
Cane ..	..	..	42.7	95	93	98	7.4	—
Sucrose	..	..	14.5	100	95	96	4.7	—
Sugar	..	..	6.2	95	84	94	4.7	—

14. Frome—Masemure—Masemure—Big Hill (B41227)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	42.0	98	93	98	6.4	—
1st Ratoon								
Cane ..	..	..	43.6	113	107	105	4.1	—
Sucrose	..	..	11.2	105	109	113	10.3	—
Sugar	..	..	5.1	114	109	117	13.3	—

15. Frome—Masemure—Midgham—Three Corner (B41227)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	46.0	81	76	87	6.3	—
1st Ratoons								
Cane ..	..	..	29.9	81	75	84	3.6	2.9
Sucrose	..	..	14.3	98	103	89	9.8	—
Sugar	..	..	4.4	77	76	74	0.2	0.5

16. Frome—Mint—Mint—Jameson (B41227)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	44.4	82	78	83	8.3	—
1st Ratoon								
Cane ..	..	..	35.6	89	88	87	5.5	—
Sucrose	..	..	12.3	108	112	110	4.4	—
Sugar	..	..	4.4	93	97	93	7.1	—

17. Frome—Mint—Mt. Eagle—Ricketts (B41227)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	51.7	107	108	107	5.3	—
1st Ratoons								
Cane ..	..	..	41.0	101	98	99	4.0	—
Sucrose	..	..	14.1	93	90	87	4.7	—
Sugar	..	..	5.9	95	90	82	6.1	—

18. Frome—Shrewsbury—Cornwall—John Grass (B4362)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	36.1	95	89	86	2.5	7.5
1st Ratoons								
Cane ..	..	..	31.4	110	93	97	12.2	—
Sucrose	..	..	14.3	105	109	107	0.8	2.6
Sugar	..	..	4.5	115	101	103	11.7	38.8

19. Frome—Shrewsbury—Friendship—Browne (B41227)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	42.3	93	83	100	3.3	9.9
1st Ratoons								
Cane ..	..	..	37.1	86	77	94	3.5	9.5
Sucrose	..	..	13.8	100	100	98	1.4	—
Sugar	..	..	5.1	86	77	92	4.6	13.2

20. Frome—Shrewsbury—Shrewsbury—Roaring River (B4362)

			1	2	3	4		
Spring Plants								
Cane ..	..	..	40.0	99	101	91	5.4	—
1st Ratoons								
Cane ..	..	..	36.2	94	97	91	1.0	—
Sucrose	..	..	13.7	104	97	102	5.6	—
Sugar	..	..	4.9	101	93	92	5.5	—

21. Frome—Shrewsbury—Shrewsbury—Top Marlie (B41227)

DISTANCE FROM INTERVAL IN CHAINS							S.E. % g.m.	Sig. Diff.
		1	2	3	4			
Spring Plants								
Cane		43.7	100	100	90		13.4	—
Summary:								
Cane		46.7	95	92	90		6.0	4.0
1st Ratoons								
Cane		33.6	117	105	96		6.3	—
Sucrose		13.2	91	94	97		4.6	—
Sugar		4.4	94	102	108		10.2	—
Summary:								
Cane		38.8	101	96	98		5.3	1.9
Sucrose		13.6	100	101	100		4.1	0.3
Sugar		5.3	97	91	94		6.3	4.6

22. Frome—Belle Isle—Belle Isle—John Crow (B4362)

22. Prome—Bene Isle—Bene Isle—Jom Crow (B4562)							S.E. % g.m.	Sig. Diff.
		A	B	C	D	E		
1st Ratoons								
Cane	..	60.1	98	92	100	99	5.1	—
Sucrose	..	15.1	99	92	93	97	6.8	—
Sugar	..	9.3	98	86	93	97	7.8	—
2nd Ratoons								
Cane	..	56.3	96	105	99	97	10.4	—
Sucrose	..	13.7	105	109	99	106	5.5	—
Sugar	..	7.7	100	114	98	103	10.3	—
3rd Ratoons								
Cane	..	46.4	110	102	111	109	7.2	—
Sucrose	..	14.6	102	100	101	96	5.4	—
Sugar	..	6.8	112	100	112	105	8.1	—

A = Control.
 B = Trash turned and no forking.
 C = Alternate rows forked and trash replaced.
 D = Alternate rows forked and trash not replaced.
 E = Every row forked.

23. Frome—Blue Castle—Guthrie Pen 3 (B41227)

25. Frorie—Blue Castle—Guthrie Pen 3 (B41227)							S.E. % g.m.	Sig. Diff.
		A	B	C	D	E		
Spring Plants								
Cane	..	30.8	94	90	100	89	7.2	—
Sucrose	..	12.7	99	97	104	102	4.2	—
Sugar	..	3.9	94	88	104	91	10.1	—
1st Ratoons								
Cane	..	31.8	108	101	107	103	5.4	—
Sucrose	..	14.4	99	101	102	103	2.9	—
Sugar	..	4.6	107	102	109	106	3.5	—
2nd Ratoons								
Cane	..	36.7	107	111	107	108	8.8	—
Sucrose	..	13.4	97	102	101	102	6.3	—
Sugar	..	4.9	105	114	109	109	8.3	—
3rd Ratoons								
Cane	..	36.4	110	100	102	105	8.5	—
Sucrose	..	13.8	98	99	99	102	6.2	—
Sugar	..	5.0	109	99	101	107	10.6	—

A = Control.
 B = Trash turned and no forking.
 C = Alternate rows forked and trash replaced.
 D = Alternate rows forked and trash not replaced.
 E = Every row forked.

24. Frome—Mint—Mint—Plum Tree (B4362)

	A	B	C	D	E	S.E. % g.m.	Sig. Diff.
Spring Plants							
Cane	34.4	98	97	85	92	10.9	—
Sucrose	12.4	99	98	93	98	6.5	—
Sugar	4.2	98	96	80	90	11.4	—
1st Ratoons							
Cane	32.2	103	101	103	95	13.8	—
Sucrose	12.9	98	96	101	92	5.2	—
Sugar	4.2	102	97	104	87	12.7	—
2nd Ratoons							
Cane	24.9	93	103	99	107	13.2	—
Sucrose	12.4	102	100	102	105	4.2	—
Sugar	3.1	97	104	100	112	14.2	—

A = Control.
 B = Trash turned and no forking.
 C = Alternate rows forked and trash replaced.
 D = Alternate rows forked and trash not replaced.
 E = Every row forked.

25. Frome—Shrewsbury—Cornwall—Negro Ground (B4362)

	A	B	C	D	E	S.E. % g.m.	Sig. Diff.
3rd Ratoons							
Cane	27.4	97	104	109	101	7.7	—
Sucrose	13.8	102	102	100	101	2.8	—
Sugar	3.8	99	106	110	102	7.1	—

26. United Estates—Whitewater 5 (B41227)

	5 ft. banks	10 ft. banks	S.E. % g.m.	Sig. Diff.	Straight planting	Staggered planting	S.E. % g.m.	Sig. Diff.	No flotal	10 cwt. flotal per acre
Spring Plants										
Cane	45.4	94	10.5	—	47.5	102	6.9	—	—	—
% Sucrose	11.7	99	4.8	—	12.9	100	3.7	—	—	—
Sugar	5.9	93	12.4	—	6.1	100	8.6	—	—	—
1st Ratoons										
Cane	52.2	90	7.9	—	50.1	98	7.6	—	49.9	101
Sucrose	12.4	98	4.9	—	12.1	102	7.5	—	12.0	99
Sugar	6.4	88	9.0	—	6.0	100	9.0	—	6.0	100
2nd Ratoons										
Cane	37.3	90	7.1	—	35.6	99	10.5	—	—	—
Sucrose	12.6	99	5.8	—	12.3	104	9.7	—	—	—
Sugar	4.7	89	8.0	—	4.4	100	9.8	—	—	—

27. Worthy Park—Cocoa Walk 3 (B41227)

	N	S	N	D	B ₀	B ₁	L ₀	CANE L ₁	Mean		N	S	N	D
Spring Plants														
N ₀	37.5	103	37.3	104	37.8	86	34.3	122	38.1	B ₀	36.4	108	36.2	106
N ₁	98	109	102	107	100	89	104	123	102	B ₁	90	92	87	92
L ₀	33.7	107	33.5	109	34.7	86	—	—	—					
L ₁	121	129	124	127	118	105	—	—	—					
Mean	34.6	105	34.5	106	37.9	87	35.0	120						
Normal vs deep knifing A B Normal vs subsoil fertilizer placement A B														
S.E. % g.m.		12.0			8.9			9.5			10.0			
Sig. Diff.		K	N		B	L		P	N		B	L		
		—	—		4.5	4.0		4.8	—		5.0	4.5		

CANE														
										N	S	N	D	
1st Ratoons														
N ₀	..	..	43.2	105	44.7	99	47.5	90	42.0	111	44.4	B ₀	..	.. 47.6 105 49.9 95
N ₁	..	..	106	114	108	105	105	105	111	116	107	B ₁	..	.. 94 101 92 93
L ₀	..	..	43.0	106	45.5	95	47.3	91	—	—				
L ₁	..	..	107	115	104	106	106	104	—	—				
Mean	..	..	44.6	107	46.5	98	48.7	95	44.3	108				

										Normal vs. subsoil fertilizer placement				
										A		B		
										A		B		
S.E. % g.m.	..	..	15.4		9.9					12.6		10.1		
Sig. Diff.	..	..	K	N	B	L				P	N	B	L	
	..	..	—	4.2	4.6	4.2				5.8	4.2	4.7	4.3	

CANE														
										N	S	N	D	
2nd Ratoons														
N ₀	..	..	38.0	104	37.9	100	36.7	103	35.3	115	37.2	B ₀	..	.. 37.3 104 38.0 99
N ₁	..	..	104	99	102	97	103	108	108	103	106	B ₁	..	.. 101 102 95 105
L ₀	..	..	38.5	101	36.5	112	37.0	109	—	—				
L ₁	..	..	93	99	104	102	99	95	—	—				
Mean	..	..	37.9	101	37.2	103	36.8	104	38.7	109				

										Normal vs. subsoil fertilizer placement				
										A		B		
										A		B		
S.E. % g.m.	..	..	7.2		10.4					6.1		13.2		
Sig. Diff.	..	..	K	N	B	L				P	N	B	L	
	..	..	—	—	—	—				—	—	—	—	

Subsoiling: N = Normal.

D = Extra deep and half normal spacing between cuts.

Fertilizing: N = Normal method of application.

S = $\frac{1}{2}$ S/A application

$\frac{1}{2}$ M/K

All S/P

$\frac{1}{2}$ S/A

$\frac{1}{2}$ M/K

B = 30 tons bagasse per acre.

L = 20 tons marl per acre.

} applied by tractor 6 in. below surface before planting.

} applied at same time as normal application and broadcast as normal.

28. Worthy Park—Cocoa Walk 5 (B41227)

CANE										CANE				
										A	B	C	D	Mean
Spring Plants										1st Ratoons				
4 ft.	..	..	44.9	110	106	101	46.8			4 ft.	..	41.3	122	104 118 45.8
5 ft.	..	..	94	98	97	105	94			5 ft.	..	115	123	128 125 111
6 ft.	..	..	84	83	90	97	85			6 ft.	..	102	106	107 117 97
Mean	..	..	41.6	105	106	109	—			Mean	..	43.6	111	107 114 —
										Planting Spacing				
S.E. % g.m.	..	..	9.9	14.5						10.4	17.6			
Sig. Diff.	..	..	—	—						8.0	—			

CANE					
2nd Ratoons					
4 ft.	..	..	37.9	114	107 131 42.9
5 ft.	..	..	125	135	128 126 114
6 ft.	..	..	105	111	111 104 95
Mean	..	..	41.7	109	105 110 —

S.E. % g.m.			Planting Spacing		
Sig. Diff.	..	..	10.2	21.8	

A = Planting double type straight 2' apart

B = " single " " 1' "

C = " " " 9" staggered 1' apart

D = " " " 18" " 1' "

4 ft. = 6 rows x 4 ft.

5 ft. = 5 rows x 5 ft.

6 ft. = 4 rows x 6 ft.

		CANE				
		A	B	C	D	Mean
3rd Ratoons						
4 ft.	..	37.3	105	100	102	37.9
5 ft.	..	96	102	102	90	96
6 ft.	..	94	102	90	95	94
Mean	..	36.1	106	101	99	—
S.E. % G.M.		Planting Spacing				
Sig. Diff.		9.7 6.5				
		— —				

29. Innswood—St. Helen's—9c (B34104)

		A	B	C	D	S.E. % g.m.	Sig. Diff.
Fall Plants							
Cane ..	..	25.5	101	105	102	5.6	—
1st Ratoons							
Cane ..	..	36.9	91	96	99	5.1	—
Sucrose ..	..	11.5	101	100	98	9.6	—
Sugar ..	..	4.2	92	95	96	10.4	—
2nd Ratoons							
Cane ..	..	33.4	91	90	89	12.4	—
Sucrose ..	..	12.6	101	99	100	4.9	—
Sugar ..	..	4.2	92	89	89	13.7	—
3rd Ratoons							
Cane ..	..	27.6	102	83	83	8.1	11.8
		A = Standard practice irrigating every row.					
		B = 10 ft. banks with 2 cane rows on each bank.					
		C = Irrigating every other furrow with drains 10 ft. apart.					
		D = " " " " " " 20 ft. "					

30. Monymusk—Springfield—Beauchamp—Paradise 11 (B41227)

		1	2	3	4	5	S.E. % g.m.	Sig. Diff.
Spring Plants								
Cane ..	..	54.8	95	97	90	97	8.0	—
Sucrose ..	..	12.0	104	99	95	100	7.9	—
Sugar ..	..	6.6	99	95	85	97	14.0	—
1st Ratoons								
Cane ..	..	36.5	95	92	99	93	11.3	—
Sucrose ..	..	7.5	109	114	96	102	9.6	—
Sugar ..	..	2.7	104	106	95	95	17.1	—
		1 = Normal irrigation.						
		2 = Long line " (Bank planted).						
		3 = " " " (Furrow planted).						
		4 = Long line irrigation (alternate rows wet).						
		5 = " " " (double 9 ft. bank).						

PART 5
DRAINAGE EXPERIMENTS

1. Frome—Barham—Great Trench (B4362)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	36.7	106	95
Sucrose	..	..	..	16.0	98	100
Sugar	..	..	..	5.9	103	95

2. Frome—Belle Isle—Brown (B4362)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	58.9	94	115
Sucrose	..	..	..	13.3	100	101
Sugar	..	..	..	7.8	95	116

3. Frome—Belle Isle—Bullet Tree (B4362)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	48.7	93	80
Sucrose	..	..	..	13.7	107	100
Sugar	..	..	..	6.7	100	80

4. Frome—Belle Isle—Jenkins (B4362)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	49.6	102	105
Sucrose	..	..	..	13.6	101	101
Sugar	..	..	..	6.7	103	107

5. Frome—Belle Isle—Meylersfield—McFarlane (B4362)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	40.1	114	117
Sucrose	..	..	..	15.4	95	96
Sugar	..	..	..	6.2	119	112

6. Frome—Belle Isle—Meylersfield—McKenzie (B4362)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	35.0	105	125
Sucrose	..	..	..	15.5	86	91
Sugar	..	..	..	5.4	90	114

7. Frome—Masemure—Garden Piece (B4362)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	41.5	136	138
Sucrose	..	..	..	14.8	92	101
Sugar	..	..	..	6.1	125	139

8. Frome—Masemure—Midgham—Bridge Piece (B41227)

				d_2	d_1	d_0
Spring Plants						
Cane	..	..	..	36.2	123	118
Sucrose	..	..	..	13.8	102	93
Sugar	..	..	..	5.0	126	111

9. Frome—Masemure—Retrieve—Guava (B4362)

				d ₂	d ₁	d ₀
Spring Plants						
Cane	..	..	..	39.2	107	114
Sucrose	..	..	..	12.7	108	96
Sugar	..	..	..	5.0	115	110

10. Frome—Mint—Mt. Eagle—Barclay Piece (B4362)

				d ₂	d ₁	d ₀
Spring Plants						
Cane	..	..	..	50.2	81	87
Sucrose	..	..	..	12.0	124	123
Sugar	..	..	..	6.0	100	108

Summary:

				d ₂	d ₁	d ₀	S.E. % g.m.	Sig. Diff.
Cane	..	..	..	43.6	106	110	10.3	—
Sucrose	..	..	..	14.1	101	100	5.7	—
Sugar	..	..	..	6.1	108	110	9.1	—

d₂ = Drains cleaned normally.
d₁ = " " once per crop.
d₀ = " " once per cycle.

PART 6
DISEASE EXPERIMENTS
RATOON STUNTING

1. Appleton—Raheen—Gold Piece (B34104)

	C	D	I	S.E. % g.m.	Sig. Diff.
Fall Plants					
Cane ..	44.6	91	109	15.7	15.3
% Pol ..	12.7	99	92	11.0	—
Pol ..	5.6	88	101	19.8	—
1st Ratoons					
Cane ..	27.2	109	111	25.5	—
% Sucrose ..	11.9	95	101	9.6	—
Sugar ..	3.3	105	111	30.4	—
2nd Ratoons					
Cane ..	19.2	106	108	24.1	—
% Sucrose ..	15.7	102	99	3.2	—
Sugar ..	3.0	109	108	22.9	—

C = Clean tops.

D = Suspected.

I = Inoculated.

2. Long Pond—Gibraltar 2 (Co421)

	Not inoculated	Inoculated (A)	Not heat treated	Heat treated (B)	Diseased setts	Healthy setts (C)	S.E. % g.m.	A	Sig. Diff. B	C
Spring Plants										
Cane ..	31.1	95	28.8	110	29.7	104	8.5	—	7.8	—
% Sucrose ..	9.0	102	9.8	87	9.2	99	13.2	—	7.4	—
Sugar ..	2.8	95	2.8	95	2.7	104	16.1	—	—	—
1st Ratoons										
Cane ..	31.0	93	28.0	113	26.1	129	16.9	—	—	17.0
2nd Ratoons										
Cane ..	29.2	112	28.9	114	34.2	81	25.3	—	—	—
% Sucrose ..	11.9	99	11.7	103	11.8	101	8.4	—	—	—
Sugar ..	3.5	112	3.4	117	4.0	82	23.6	—	—	—
3rd Ratoons										
Cane ..	21.5	92	19.7	109	20.7	100	8.8	—	7.4	8.0

3. Long Pond—Steelfield—Bottom Martial Law

CANE
RATOON STUNTING RESISTANCE TRIALS

		B34104		B37161		B37172		B41227	
		NHT	HT	NHT	HT	NHT	HT	NHT	HT
NI ..	..	30.0	95	17.8	143	42.9	83	41.3	97
I ..	..	84	82	97	82	81	76	82	87

		B42231		B4362		B43214		B47258	
		NHT	HT	NHT	HT	NHT	HT	NHT	HT
NI ..	..	28.9	86	26.6	86	31.4	82	22.1	109
I ..	..	99	91	73	70	102	94	102	107

	B47310		B47361		A17		A26	
	NHT	HT	NHT	HT	NHT	HT	NHT	HT
NI	29.3	83	28.1	80	21.2	83	27.8	27.5
I	96	79	65	89	76	92	90	93

	A32		Co331		D95		E162	
	NHT	HT	NHT	HT	NHT	HT	NHT	HT
NI	17.9	94	30.4	114	26.6	78	18.5	108
I	103	82	101	102	63	79	88	86

	E168		F150		F364		G483	
	NHT	HT	NHT	HT	NHT	HT	NHT	HT
NI	24.2	108	18.8	104	20.4	101	23.6	126
I	116	97	114	113	74	82	95	69

	I213		I216		J284	
	NHT	HT	NHT	HT	NHT	HT
NI	27.2	106	20.2	131	24.6	75
I	87	100	91	107	78	85

N.B. NI = Not Inoculated.
I = Inoculated.
NHT = Not heat treated.
HT = Heat treated.

4. Worthy Park—Bullet Tree 1.

						CANE				
						DD	Nemagon	EDB	Chlordane	BHC
Spring Plants										
B41227	0	..	..	..	..	24.2	28.0	26.4	19.1	22.8
	1	..	..	..	..	131	126	112	152	103
	2	..	..	..	..	168	128	108	151	121
B4362	0	..	..	..	..	5.4	10.8	8.3	9.3	10.2
	1	..	..	..	..	237	143	124	140	92
	2	..	..	..	..	348	134	130	158	85
S.E. % g.m.						29.2	16.3	18.6	25.3	18.9
Significant Difference						131.4	70.2	71.2	68.9	37.1

APPENDIX III

PART 1

FACTORY DATA COMPARED BY CROPS

TABLE I
JUICE QUALITY. CROPS 1954-58

	1954	1955	1956	1957	1958
Cane, Pol %	11.94	12.83	12.78	12.43	12.15
Absolute Juice—°Brix	17.02	18.14	17.92	17.70	17.49
Purity	81.61	82.73	82.98	81.89	80.97

TABLE II
MILLING FIGURES. CROPS 1954-58

	1954	1955	1956	1957	1958
Tons cane per hour (TCH)	56.23	59.56	61.40	64.34	61.93
Tons fibre per hour (TFH)	7.89	8.64	8.66	9.17	8.80
Imbibition % Fibre	139.59	134.11	126.78	127.71	127.58
Reduced Pol Extraction	94.88	95.21	94.99	94.72	95.01
Absolute Juice lost % Fibre (pol basis) ..	35.86	33.52	35.09	36.95	34.90
Pol % Bagasse	2.33	2.47	2.55		2.60

TABLE III
LIME CONSUMPTION IN JAMAICAN FACTORIES. CROPS 1954-58

	Lbs. CaO/Ton Cane					Lbs. CaO/Ton Non-pol				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
†Monymusk	2.95*	2.99*	3.84*	4.90*	5.24	104.2*	102.7*	134.3*	157.83*	176.11*
Richmond/Llandovery	1.49	1.78	1.78	1.64	1.48	60.6	75.0	75.7	68.42	50.80
Jamaica Sugar Estates	1.18	1.30	1.28	1.15	0.92	50.1	60.0	59.2	47.45	34.56
Frome	1.04	1.12	0.94	1.14	1.09	41.2	46.8	39.4	47.83	42.90
New Yarmouth	1.51	1.52	1.39	1.49	1.30	55.7	58.7	54.5	57.24	48.25
Caymanas	1.36	1.07	1.22	1.21	1.67	54.7	44.1	50.7	50.88	70.14
Innswood	0.98	0.98	0.98	0.78	0.89	38.2	44.5	44.7	31.23	34.02
Barnett	1.21	1.04	0.77	0.57	0.69	53.8	49.0	36.5	26.08	29.86
Worthy Park	1.46	0.93	1.16	1.56	1.23	79.3	49.5	58.8	77.16	56.19
Rose Hall	0.95	0.92	0.77	0.67	0.62	41.9	36.5	36.0	28.03	24.54
Gray's Inn Central	1.62	1.51	1.21	1.15	1.26	62.1	59.2	47.1	40.86	45.28
Sevens	1.04	0.92	1.05	1.39	0.69	44.8	38.6	45.4	55.93	25.69
United Estates	1.28	1.29	1.05	0.99	1.45	56.2	58.8	47.1	45.83	63.08
Serge Island	1.28	1.35	1.66	1.60	2.09	54.7	60.9	83.7	74.69	96.72
Vale Royal	0.93	1.21	1.23	1.42	0.96	47.6	56.9	60.3	61.19	41.33
Appleton	0.97	0.78	1.25	0.66	0.89	43.2	40.5	58.8	30.07	37.99
Hampden	0.99	1.11	0.73	1.04	0.69	44.0	47.0	36.8	45.41	27.50
Bernard Lodge	1.55	1.72	1.60	1.41	1.44	69.7	71.9	69.9	59.40	56.70
Holland	1.25	1.53	1.01	1.04	1.39	49.1	60.8	38.3	40.28	46.95
Long Pond	1.34	1.47	1.95	1.88	1.78	65.5	45.1	96.0	84.93	77.96

*Includes Refinery Consumption.

†New Factory in 1949.

TABLE IV
HEATER CAPACITIES. JAMACIAN FACTORIES. CROPS 1954-58

Factory	Cu. ft. M.Jc/Sq. ft. H.S./Hr.				
	1954	1955	1956	1957	1958
Monymusk	0.97	1.00	0.97	0.95	0.92
Richmond/Llandovery	1.35	1.31	1.32	1.15	1.29
Jamaica Sugar Estates	1.15	1.22	1.31	1.34	1.27
Frome	1.00	0.79	0.78	1.01	0.96
New Yarmouth	0.77	1.17	1.15	1.11	1.13
Caymanas	0.90	0.94	0.95	0.96	0.92
Innswood	1.11	1.20	1.16	0.82	1.83
Barnett	0.79	0.83	1.15	0.81	0.77
Worthy Park	1.07	1.03	1.10	0.74	0.76
Rose Hall	0.66	0.50	0.54	0.77	0.82
Gray's Inn Central	1.03	1.03	1.01	0.97	1.00
Sevens	0.98	0.98	0.89	1.04	1.05
United Estates	0.74	0.82	0.88	0.84	0.82
Serge Island	1.09	1.08	0.95	0.95	1.13
Vale Royal	1.03	1.21	1.03	0.78	0.82
Appleton	0.77	0.83	0.84	0.97	0.99
Hampden	0.73	0.78	0.84	1.60	1.57
Bernard Lodge	0.95	0.91	0.97	1.00	0.96
Holland	0.61	0.65	0.45	0.72	0.63
Long Pond	0.72	0.68	0.62	0.67	0.59

TABLE V
ROTARY FILTER PERFORMANCE, CROPS 1954-58

Factory	Sq. ft. FA/TCH					Pol in Cake % Pol in Cane				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Monymusk	3.82	3.69	3.77	3.70	3.81	0.49	0.43	0.49	0.54	0.60
Richmond/Llandovery	—	—	—	—	—	—	0.49	0.56	0.69	0.78
Jamaica Sugar Estates	—	—	—	—	—	—	0.48	0.56	0.53	0.56
Frome	2.63	3.81	3.79	3.70	3.88	0.26	0.22	0.21	0.20	0.22
New Yarmouth	4.94	4.78	4.74	4.92	4.73	0.38	0.45	0.43	0.60	0.58
Caymanas	5.47	5.35	5.23	5.22	5.22	0.54	0.33	0.46	0.43	0.51
Innswood	3.98	3.66	3.82	3.58	3.45	0.24	0.35	0.26	0.27	0.35
Barnett	5.82	5.34	4.92	4.72	5.03	0.27	0.35	0.36	0.37	0.58
Worthy Park	—	—	—	—	—	—	0.30	0.49	0.64	0.55
Rose Hall	—	—	5.75	5.40	5.37	—	0.53	0.39	0.37	0.24
Gray's Inn Central	6.35	6.29	6.33	6.49	6.37	0.62	0.63	0.46	0.69	0.56
Sevens	3.45	3.26	3.52	3.21	3.25	0.27	0.34	0.26	0.39	0.38
United Estates	3.70	3.55	3.20	3.21	3.28	0.41	0.33	0.33	0.54	0.50
Serge Island	—	7.55	8.19	8.37	8.01	—	0.79	0.80	0.67	0.46
Vale Royal	7.70	6.37	6.04	5.63	5.43	0.62	0.62	0.43	0.35	0.44
Appleton	4.31	3.84	3.84	3.22	3.23	0.23	0.13	0.23	0.25	0.28
Hampden	—	6.06	5.51	5.57	5.63	—	0.40	0.76	0.62	0.92
Bernard Lodge	5.34	5.53	5.22	5.17	5.28	0.37	0.42	0.26	0.44	0.51
Holland	—	—	—	—	—	—	0.57	0.48	0.54	0.63
Long Pond	—	—	—	—	—	—	0.54	0.52	0.51	0.48

TABLE VI
FILTER STATION CONTROL FIGURES. CROPS 1954-58

	1954	1955	1956	1957	1958
Pol % Mud	2.02	1.84	2.06	2.11	2.27
Mud % Cane	2.29	2.43	2.51	2.55	2.49
Pol in Mud % Pol in Cane	0.39	0.35	0.40	0.43	0.47

TABLE VII
EVAPORATION RATES (AS LBS. EVAP./SQ. FT. H.S./HR.). CROPS 1954-58

Factory	°Brix Syrup					Lbs./Sq. ft. H.S./Hr.				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Monymusk	54.67	54.92	57.87	57.76	55.90	8.67	7.17	6.99	6.87	6.69
Richmond/Llandovery ..	62.35	60.45	59.99	61.24	65.87	7.52	8.09	7.13	6.89	8.39
Jamaica Sugar Estates ..	57.56	56.59	57.41	62.14	58.64	6.62	5.67	6.33	6.63	6.05
Frome	57.97	59.89	57.63	54.43	59.18	7.98	7.94	7.67	7.70	7.41
New Yarmouth ..	66.11	63.42	62.99	60.36	61.76	7.68	7.62	7.40	7.16	6.54
Caymanas	54.75	62.12	64.12	61.39	62.33	4.63	5.02	4.59	4.57	4.49
Innswood	58.36	57.37	56.42	57.20	58.27	6.52	6.84	6.66	7.08	6.36
Barnett	57.53	59.13	59.40	57.67	57.17	7.35	7.53	8.26	8.30	7.75
Worthy Park	61.74	62.08	62.40	53.11	61.51	6.14	5.75	6.15	6.16	6.77
Rose Hall	59.99	63.37	61.53	58.97	65.42	8.02	8.01	8.45	6.46	6.67
Gray's Inn Central ..	53.03	54.83	56.25	59.52	57.51	5.74	5.66	5.70	5.42	5.76
Sevens	64.32	64.78	65.47	62.06	66.90	6.75	6.63	6.75	7.00	7.22
United Estates	64.59	65.24	68.19	69.14	67.45	9.42	9.81	9.87	10.02	9.54
Serge Island	48.88	54.30	54.32	53.33	57.31	9.20	9.02	8.06	7.89	8.82
Vale Royal	60.64	61.28	59.28	62.05	59.95	8.89	7.22	7.63	8.13	8.57
Appleton	46.64	48.82	58.26	57.57	64.36	6.91	7.34	7.61	9.23	6.92
Hampden	59.40	59.96	60.22	60.91	59.41	7.18	7.27	7.75	7.89	8.04
Bernard Lodge	61.43	61.91	65.46	62.26	64.30	5.40	5.08	5.57	5.61	5.48
Holland	57.72	60.35	57.35	62.43	61.08	4.84	5.02	5.05	5.65	4.92
Long Pond	52.42	58.95	56.20	52.49	51.83	7.90	8.90	8.48	7.52	7.01

TABLE VIII
POLARIZATIONS, MOISTURES, SAFETY FACTORS AND PERMISSIBLE MOISTURES—EXPORT SUGAR. CROPS 1954-58

Factory	°Polarization					% Moisture				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Monymusk	96.59	96.49	97.97	97.09	97.03	1.14	0.96	0.58	0.67	0.75
Richmond/Llandovery ..	—	—	96.70	—	—	—	—	0.87	—	—
Jamaica Sugar Estates ..	—	—	97.58	—	97.18	—	—	0.94	—	0.93
Frome	96.23	96.57	96.87	96.75	96.82	1.07	0.94	0.82	0.73	0.76
New Yarmouth	97.32	97.68	97.74	97.71	97.44	—	0.58	0.55	0.60	0.72
Caymanas	97.57	97.21	97.38	97.52	97.24	—	—	—	0.80	0.80
Innswood	97.01	97.28	97.09	97.20	97.13	0.99	0.90	0.86	0.85	0.71
Barnett	97.48	97.09	97.64	97.80	97.28	1.00	0.99	0.96	0.80	0.72
Worthy Park	96.92	97.21	97.11	97.12	97.20	1.05	1.03	0.99	1.00	0.99
Rose Hall	97.28	97.09	97.25	97.12	97.18	0.83	0.85	0.80	0.85	0.82
Gray's Inn Central	96.57	97.15	97.21	97.33	96.81	1.00	0.81	0.87	0.80	0.85
Sevens	96.54	97.10	97.33	97.54	97.25	0.73	0.68	0.65	0.64	0.66
United Estates	97.02	97.05	97.70	97.58	97.43	0.85	0.89	0.84	0.72	0.75
Serge Island	96.88	96.86	97.08	97.32	97.32	0.83	0.92	0.96	0.96	0.79
Vale Royal	—	—	97.12	97.19	—	—	—	0.64	0.68	—
Appleton	97.18	97.42	97.08	97.01	97.31	0.86	0.87	0.84	0.84	0.84
Hampden	97.96	98.10	98.18	98.02	97.58	0.87	0.87	0.88	0.91	0.82
Bernard Lodge	—	97.45	97.47	97.72	97.56	—	0.90	—	—	0.86
Holland	96.94	96.51	96.91	97.12	96.49	0.83	0.91	0.84	0.84	0.81
Long Pond	97.57	—	97.58	97.22	97.48	—	—	0.64	0.64	0.64

Factory	Safety Factor					Permissible % Moisture				
	1954	1955	1956	1957	1958	1954	1955	1956	1957	1958
Monymusk	0.334	0.274	0.286	0.230	0.253	0.85	0.88	0.51	0.73	0.74
Richmond/Llandovery ..	—	—	0.264	—	—	—	—	0.83	—	—
Jamaica Sugar Estates ..	—	—	0.390	—	0.330	—	—	0.61	—	0.73
Frome	0.284	0.274	0.262	0.225	0.239	0.94	0.86	0.78	0.81	0.80
New Yarmouth	—	0.250	0.243	0.262	0.281	0.67	0.58	0.57	0.57	0.64
Caymanas	—	—	—	0.323	—	0.61	0.70	0.66	0.62	—
Innswood	0.331	0.331	0.296	0.304	0.247	0.75	0.68	0.73	0.70	0.72
Barnett	0.397	0.340	0.407	0.364	0.265	0.63	0.73	0.59	0.55	0.68
Worthy Park	0.341	0.369	0.343	0.347	0.354	0.77	0.70	0.72	0.72	0.70
Rose Hall	0.305	0.292	0.291	0.295	0.291	0.68	0.73	0.69	0.72	0.71
Gray's Inn Central	0.292	0.284	0.312	0.300	0.266	0.86	0.71	0.70	0.67	0.80
Sevens	0.211	0.234	0.243	0.260	0.240	0.87	0.73	0.67	0.62	0.69
United Estates	0.285	0.302	0.365	0.298	0.292	0.75	0.74	0.58	0.61	0.64
Serge Island	0.266	0.293	0.329	0.358	0.295	0.78	0.79	0.73	0.67	0.67
Vale Royal	—	—	0.222	0.242	—	—	—	0.72	0.70	—
Appleton	0.305	0.337	0.288	0.281	0.312	0.71	0.65	0.73	0.75	0.67
Hampden	0.426	0.456	0.484	0.460	0.339	0.51	0.48	0.46	0.50	0.61
Bernard Lodge	—	0.353	—	—	0.352	—	0.64	0.63	0.57	0.61
Holland	0.271	0.261	0.272	0.292	0.231	0.77	0.87	0.77	0.72	0.88
Long Pond	—	—	0.264	0.230	0.254	0.61	—	0.61	0.70	0.63

TABLE IX
PER CENT. GROSS GRINDING TIME. CROPS 1954-58

	1954	1955	1956	1957	1958
Non-Factory Stoppages	15.11	14.81	15.41	20.47	19.91
Factory Stoppages	7.72	7.20	7.66	7.84	7.93
Time Grinding	77.17	77.99	76.93	71.69	72.16

TABLE X
POL BALANCE (% POL IN CANE). CROPS 1954-58

	1954	1955	1956	1957	1958
Pol in Sugars	84.33	84.48	84.82	83.39	82.72
Pol in Bagasse	5.53	5.69	5.75	6.14	6.29
Pol in Molasses	8.23	7.97	7.64	8.06	8.70
Pol in Filter Cake	0.39	0.35	0.40	0.43	0.47
Pol in Undetermined	1.52	1.51	1.39	1.98	1.82

TABLE XI
COMPARATIVE CONTROL FIGURES CROPS 1954-58

	1954	1955	1956	1957	1958
Pol % Cane	11.94	12.83	12.78	12.43	12.15
Mixed Juice—Purity	82.02	83.17	83.38	82.29	81.82
Tons Cane/Ton 96° Sugar	9.53	8.86	8.86	9.26	9.50
Boiling House Efficiency (W.C.)	97.85	97.46	97.78	97.22	96.36
Boiling House Efficiency (S.J.M.)	—	—	—	—	97.49
Pol in Sugars % Pol in Cane	84.33	84.48	84.48	83.39	82.72
Pol in Molasses % Pol in Cane	8.23	7.97	7.64	8.06	8.70

TABLE XII
MOLASSES FACTORS. CROPS 1954-58

Factory	1954	1955	1956	1957	1958
Monymusk	44.62	45.25	44.11	46.14	46.85
Richmond/Llandovery	38.26	40.57	40.49	39.40	38.84
Jamaica Sugar Estates	38.91	38.89	39.30	40.04	40.49
Frome	33.98	37.76	38.64	37.02	36.89
New Yarmouth	38.10	38.78	37.61	37.44	38.28
Caymanas	39.65	40.15	38.92	40.05	43.23
Innswood	47.32	57.14	49.76	45.55	31.51
Barnett	42.62	44.81	37.74	38.01	42.82
Worthy Park	41.69	45.20	37.90	37.89	40.71
Rose Hall	52.45	44.45	38.71	36.13	38.48
Gray's Inn Central	39.03	42.62	40.42	36.44	44.79
Sevens	39.86	36.78	40.68	39.28	40.33
United Estates	38.31	36.77	37.88	40.86	41.97
Serge Island	35.62	38.99	45.03	42.33	41.65
Vale Royal	39.72	38.06	36.69	36.18	40.11
Appleton	29.67	30.12	30.03	40.35	31.89
Hampden	42.87	46.91	48.53	38.96	45.12
Bernard Lodge	45.44	43.24	38.16	42.51	42.38
Holland	37.02	40.11	35.70	39.00	44.45
Long Pond	38.77	27.06	36.80	36.78	39.09

TABLE XIII
QUALITY OF CANE SUPPLIED TO JAMAICAN FACTORIES, EXPRESSED AS POSSIBLE TONS CANE/TON 96° SUGAR
(Calculated on a basis of assumed Mill Extraction of 96.50, a B.H.E. (Winter Crop) of 100 and Pol % Cane and Purity of Mixed Juice as reported.)
(Calculated on Copp's Tables—Spencer Meade, page 762.)

Factory	1954	1955	1956	1957	1958	5 Year Averages
Monymusk	8.98	9.08	8.85	9.41	9.94	9.25
Richmond/Llandovery	8.98	8.62	8.49	8.35	10.69	9.03
Jamaica Sugar Estates	9.61	8.34	8.84	8.73	9.53	9.01
Frome	9.32	8.04	8.07	8.89	8.30	8.52
New Yarmouth	8.79	8.26	8.22	8.69	9.24	8.64
Caymanas	8.83	8.30	8.48	8.46	9.59	8.73
Innswood	9.09	8.01	8.48	8.43	9.61	8.72
Barnett	9.04	8.05	7.86	8.10	7.89	8.19
Worthy Park	7.42	6.89	7.08	7.15	7.35	7.18
Rose Hall	8.35	8.10	7.82	8.46	8.22	8.19
Gray's Inn Central	10.18	9.29	9.67	9.12	10.63	9.78
Sevens	8.66	8.36	8.55	8.65	9.08	8.66
United Estates	8.76	7.88	7.81	7.96	8.00	8.08
Serge Island	8.51	7.78	8.11	7.90	8.00	8.06
Vale Royal	8.94	8.53	8.44	8.47	8.89	8.65
Appleton	8.90	7.85	7.79	8.31	7.77	8.12
Hampden	9.26	8.19	7.64	8.09	8.68	8.37
Bernard Lodge	8.59	8.12	8.23	8.08	8.83	8.37
Holland	9.97	8.11	8.84	8.36	8.82	8.82
Long Pond	9.49	8.64	8.77	8.81	9.23	8.99
Island Averages	9.02	8.33	8.35	8.65	8.88	8.65

FACTORY DATA—1958 CROP

TABLE I
FACTORY EQUIPMENT DATA—1958 CROP
(As Reported by the Factories)

Factories	Width Carrier	Knives		Crushers and Mills	Total Rolls	Remarks
		Setts	Blades/Setts			
Monymusk	78"	2	38/58	3 Rc 35½" × 78", 10 RM 38" × 78"	18	For 1958 crop, no change. For 1969 air preheaters with induced draught for Nos. 6 and 7 boilers with separate chimney, remaining 5 boilers on existing chimney without induced draught. External calandrias for all four pot stills in place of existing coils.
Richmond-Llandovery	41"	1	22	12 RM 22" × 42", 6 RM 24" × 42"	18	One Bailey automatic draught regulator was installed and operated for 1958 crop, it worked satisfactorily. Set Fisher level control was installed on evaporators and operated for 1958 crop. Due to faulty installation it was not satisfactory.
Jamaica Sugar Estates	60"	2	30/50	2-2 RC 30" × 60", 12 RM 30" × 60"	16	Installed and used during 1958. A 70-ton capacity sugar bin with elevator and conveyor. New heater supply pump and additional factory water supply pump. Ordered for 1959 crop, 8" × 14" Elmco Rotary filter. Coils for reheating C Masseuite additional tray on 23 ft. dia. Batch clarifier.
Frome	78"	2	38/58	3 RC 35½" × 78", 12 RM 36" × 78"	15	No change.
New Yarmouth ..	52"	2	26/36	3 RC 24½" × 54", 13 RM 28" × 54"	15	Installed for 1958 crop. Mason-Neilan Levellers on evaporator. Water Softening Plant for Boiler make-up. For 1959 crop, re-arrangement of Boiler Feed System. New 20,000 gal. Reserve Feed Tank. Installation of calandrias in pot stills and a new Run Condenser.
Caymanas	48"	1	32	3 RC 27" × 48", 12 RM 25" × 48"	15	No change.
Innswood	42"	2	24/24	3 RC 24" × 42", 12 RM 24" × 42"	15	Installed and used during 1958 crop. 9500 sq. ft. H.S. Evaporator with automatic juice level control. 8—43 × 24 water driven centrifugals. One vibrating screen. Juice and sugar lines for 1000 gal. capacity copper bearing storage tank. Ordered for 1959 crop. 2—3000 gal. glass lined butts for rum storage. 1—500 gal. glass lined tank for storing distilled water.
Barnett	40"	2	24/58	3 RC 23" × 36", 12 RM 22" × 36"	15	No change for 1958. Ordered for 1959 crop, new design of furnace with balanced combustion. New steam traps. New steam traps and steam traps in pan stills and mesh entrainment preventers in all evaporator vessels. Two—400 gal. Rum Butts.
Worthy Park	42"	1	24	3 RC 22½" × 42", 3 RM 22½" × 42", 9 RM 24" × 42"	15	No change.
Rose Hall	38"	1	26	15 RM 24" × 42"	15	No change for 1958. Ordered for 1959 crop, 1 Vibrating Screen.
Gray's Inn Central	60"	1	10	2 RC 26" × 60", 12 RM 30" × 60"	14	No change for 1958. Ordered for 1959 crop, Mason Neilan Level controls—evaporation, 7500 K.W. B.T.H. Turbo Alternator. Water softening plant (Boilers) Lea Recorder for inhibition. New Retention Tank replacing three old ones.
Sevens	54"	1	26	12 RM 32" × 60"	12	Wash Preheater and 24 Vats operated for 1958 crop.
Bybrook	39"	1	24	3 RM 26½" × 42", 3 RM 25½" × 42", 6 RM 24" × 42"	12	No change for 1958. Ordered for 1959, one natural cooled crystallizer 400 cu. ft. capacity.
Serge Island	43"	1	22	3 RC 26" × 46", 9 RM 24" × 46"	12	For 1958 crop. Installation of the new 3rd Mill (4th unit). Worked satisfactorily. New installed and used during 1958 crop. One 1-ton Maxwell Boulogne liquid scale. Quadruple, the installation of an additional 2500 sq. ft. H.S. effect. Replacing present juice heaters with two 750 sq. ft. H.S. Heaters.
Vale Royal	42"	1	30	12 RM 24" × 42"	12	No change.
Applتون	42"	1	52	3 RC 26" × 42", 9 RM 25" × 42"	12	For 1958 crop. Gantry in cane yard—speeded up cane unloading—extra storage and extra facilities for controlling fresh cane delivery to mill. New boiler—combustion engineering—improved steam supply and fuel economy. New turbine generator. Edwards hydraulics on mill. Quintuple evaporator—increased capacity and efficiency. Two electrical centrifugals—improved efficiency and labour economy. For 1959 crop Level controllers on evaporators.
Hampden	44"	2	20/16	12 RM 24" × 48"	12	For 1958 crop 3 new vessels for Evaporator and Automatic Vacuum Controls were installed and used. For 1959 crop new 1500 gal. Pot Still.
Bernard Lodge ..	87"	2	42/42	2 RC 34" × 87", 3 RM 30" × 84", 6 RM 38" × 84"	11	For 1959 crop. One 1500 H.P. Steam Turbine to replace existing Mill Engine. One 375 K.V.A. Turbo-Alternator.
Holland	36"	1	18	2 RC 21" × 36", 9 RM 22" × 36"	11	For 1959 crop. 8" 6" Calandria Pan. One 718 cu. ft. Crystallizer. Preheater to Quad. 1 additional 30 × 18 Basket.
Long Pond	43"	1	33	9 RM 24½" × 48"	9	No change.

TABLE II

FACTORY STATIONS CAPACITIES, 1958

	Monr- musk	Rich- mond	Jamaica St. Eustace	Frome	New Ver- mouth	Cay- manas	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Gray's Im Central	Sevens	By- brook	Serge Island	Vale Royal	Apple- ton	Ham- den	Ber- nard Lodge	Holland	Long Pond	Totals and Averages
Per Ton Cane/Hour:																					
Boilers																					
As Water Tube	281	260	403	218	317	389	379	318	271	287	310	348	274	337	228	404	295	264	554	378	305
Superheater	45	—	63	35	41	—	—	27	—	—	14	—	—	—	—	38	—	3	—	—	35
Juice Heaters																					
sq. ft. H.S.	30	25	24	32	25	34	34	39	42	38	29	30	38	30	38	31	18	32	48	48	31
Filters																					
Presses	—	41	48	—	—	—	—	—	29	—	—	—	—	—	—	—	—	—	75	55	47
Rotary	3-81	—	—	3-98	4-73	5-22	3-45	5-03	—	5-37	6-37	3-25	3-28	8-01	5-43	3-23	5-63	5-28	—	—	4-51
First Subsiders																					
Cu. ft. H.S.	46	75	71	79	100	97	55	101	60	71	71	60	63	128	76	64	74	88	123	91	74
Intermittent	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	133
Second Subsiders																					
Intermittent	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26	—	28
Evaporators																					
Juice Heaters	10-16	—	7-39	9-12	9-67	—	11-50	11-73	13-53	13-01	242	221	5-03	10-81	10-81	8-61	11-35	277	—	21-91	10-15
As Quad	198	203	244	201	213	353	213	178	232	233	—	—	225	160	180	222	175	—	302	184	217
Per Ton Commercial Sugar/Hour:																					
As Quad	1,984	2,251	2,508	1,735	2,224	3,698	2,328	1,577	1,851	2,090	2,753	2,226	1,427	1,389	1,743	1,949	1,763	2,749	3,030	2,048	2,114
Vacuum Pans																					
As Calandria	533	282	616	360	527	547	415	485	400	—	749	357	365	419	419	416	474	691	455	660	484
sq. ft. H.S.	381	333	388	249	389	333	400	399	320	281	480	266	218	271	267	293	286	445	550	427	337
Syrup Tanks																					
cu. ft. ..	198	175	283	124	237	285	147	174	129	110	314	122	146	275	157	170	130	419	297	211	200
A and B Molasses Tanks																					
cu. ft. ..	526	421	467	297	333	285	848	362	240	331	764	344	295	500	309	434	294	623	788	467	434
Crystallizers																					
Natural Cooling	—	—	536	—	277	—	556	967	397	375	480	—	151	465	—	488	226	785	688	—	479
Air Cooled (Pit.)	506	691	894	273	504	570	575	402	—	437	1,135	738	454	387	1,115	449	396	909	—	1,290	793
Water Cooled	187	219	136	102	66	—	17	—	—	194	333	—	227	116	—	—	244	—	—	—	158
cu. ft. C.A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Installed:																					
Pug Mill L.G. Sugars	—	75	149	—	550	—	26	80	—	—	84	67	58	90	—	2,600	—	—	—	320	4,673
Water Heated	—	—	—	—	—	—	—	—	55	—	—	14	118	—	—	—	—	—	—	—	173
Vapour Heated	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
sq. ft. ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Centrifugals																					
High Grade Sugars No. Off	8	6	6	9-4	4	8	3	6	5	4	6	6	6	6	7	2	3	8	3	3	113
Size: Height	20	18	20	20-20	24	18	24	18	18	18	18	18	18	18	14	24	24	24	18	24	20
ins.	42	30	42	42-42	40	36	42	30	36	36	36	36	36	36	30	40	40	40	30	40	40
Size: Diameter	1,200	1,200	1,000	1,000-	90-850	1,000	1,200	1,100	1,200	1,100	1,220	1,200	1,300	1,000	1,200	1,200	1,200	1,100	1,200	1,200	1,129
Operating Speed	—	—	—	1,500	1,750	—	880	515	735	620	760	735	720	510	615	820	860	685	615	880	670
Gravity Factor	860	615	585	1,595	1,675	510	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Low Grade Sugars No. Off.																					
Size: Height	12	6	6-2	13	4	4	3	6	2-1	5	7	6	4	3	5	5	3	4	2	2	105
ins.	20	18	20-24	20	24	18	24	18	18-18	18	18	18	18	20	18	24	24	24	18	24	24
Size: Diameter	42	30	42-42	42	40	42	42	30	30-36	30	36	36	36	36	42	40	40	40	30	40	40
Operating Speed	1,200	1,200	750-	1,000	1,650	1,300	1,300	1,100	1,200-	1,200	1,140	1,200	1,200	1,000	1,200	1,000	1,800	1,400	1,200	1,200	1,215
Gravity Factor	860	615	595	595	1,550	1,005	1,010	515	615-	615	665	735	735	595	615	565	1,840	1,170	615	880	775
Affination																					
No. Off.	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Size: Height	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
ins.	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
Operating Speed	1,200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,200
Gravity Factor	860	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	860
Refinery																					
No. Off.	4	—	—	—	—	—	—	—	120	—	—	—	—	—	—	—	—	—	—	—	4
Size: Height	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
ins.	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
Operating Speed	1,200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,200
Gravity Factor	860	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	860

TABLE III
FACTORY QUANTITIES—1958 CROP

	Mon- truck	Rich- mond/ Man- dover	Jamaica Sugar Estate	Frome	New Vine month	Cap- males	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	Br- brook	Sarge Island	Vale Royal	Apple- ton	Hamp- den	Ber- nard Lodge	Holland	Long Ford	Totals and Averages
Tons Cane:																					
Estate Ground ..	447,520	58,160	117,167	345,543	122,352	95,037	60,753	27,079	44,510	27,359	51,194	58,472	83,498	48,374	57,555	75,579	59,165	123,540	32,499	48,738	1,984,174
Purchased Ground ..	108,148	2,437	60,940	338,155	87,069	10,619	58,421	40,638	38,644	20,485	88,273	98,941	57,141	44,026	27,844	38,518	83,175	53,067	7,874	28,639	1,253,044
Total Ground ..	555,668	60,597	178,107	673,698	209,421	105,656	119,174	67,707	83,154	47,844	109,467	157,413	140,639	92,400	85,400	114,097	142,340	176,607	40,373	77,427	3,237,218
Total for Sugar Manuf. ..	555,218	60,597	178,107	673,395	209,421	105,656	119,174	67,707	83,154	47,844	109,467	157,413	140,639	92,400	85,353	111,207	135,630	176,607	40,373	72,002	3,221,394
Grd. for Other Purposes ..	450	—	—	303	—	—	—	—	—	—	—	—	—	—	46	2,890	6,710	—	—	5,435	15,834
Bagasse																					
Estimated Surplus Tons	—	—	1,500	1,840	—	—	525	—	—	—	—	—	30	75	—	—	—	—	—	—	3,970
Fuel																					
Wood used: Factory "	776	507	—	150	100	—	184	1,500	—	3,210	765	—	—	555	1,800	—	453	53,652*	4,375	1,920	—
Distillery "	—	290	—	—	—	—	—	540	—	—	—	—	—	—	—	—	2,385	60,000*	—	—	—
Locomotives, "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Line Kiln "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Factory: Wood/Ton 96° Sugar "	0.01	0.09	—	0.002	0.005	—	0.02	0.19	—	—	0.08	—	—	0.05	—	2.554	0.03	—	—	—	—
Filter Cake	16,540	1,147	2,587	16,441	4,371	3,078	2,085	1,881	1,568	803	3,092	4,579	4,964	2,686	1,571	—	4,035	4,832	575	856	80,255
Molasses																					
Equivalent 88° Brix Gal.	3,819,711	358,906	1,052,570	3,547,408	1,080,238	516,089	578,640	370,486	364,863	249,329	704,945	981,604	727,571	449,728	438,847	640,211	823,238	903,783	248,997	357,497	18,214,855
Sugar Made																					
"A" Grade .. Tons	—	—	—	—	—	—	—	—	—	—	—	—	526-00	—	—	—	—	—	—	—	536-00
"C" Grade .. "	—	—	—	—	—	3637-00	—	850-00	2505-00	—	450-00	—	3087-00	—	—	—	—	—	—	—	10509-00
"D" Grade .. "	—	2651-70	—	4300-00	749-00	3335-30	1592-20	1800-00	2000-50	—	2400-00	1308-40	4518-80	—	1400-00	3955-10	599-90	2885-00	1951-30	300-00	35542-00
Refined .. "	11323-00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11323-00
Total Local Consumption ..	11323-00	2651-70	—	4300-00	749-00	8972-30	1692-00	2650-00	4505-50	—	2850-00	1308-40	7911-60	—	1400-00	3955-10	599-90	2885-00	1951-30	300-00	57900-00
Substitution .. "	—	—	8013-00	6750-00	2733-00	—	345-80	—	—	925-00	—	1443-60	—	—	1855-00	—	1556-10	210-00	—	911-00	20776-50
Export .. "	39388-80	2758-30	14312-70	68905-00	16545-00	3100-00	9207-40	4988-60	5899-20	4394-10	6688-00	13076-10	8326-90	8804-00	7289-80	9053-00	11688-00	14693-70	2067-00	5754-10	254899-70
Official Crop Production ..	50711-80	5410-00	17326-70	77955-00	20027-00	10072-30	11145-40	7618-60	10404-70	5319-10	9538-00	15838-10	16238-50	10657-00	8824-80	13005-10	14124-00	17786-70	4018-30	6965-10	339375-20
Lime Burnt	2,911,354	89,600	163,835	737,089	272,481	176,960	105,840	46,807	102,266	29,559	138,141	108,973	204,360	190,738	81,816	98,800	93,232	254,906	56,196	138,053	5,991,026
Phosphate																					
Superphosphate .. "	—	—	—	—	—	900	—	—	—	—	—	—	—	—	1,792	—	—	—	—	—	2,392
Tri Sodium Phosphate Lbs.	11,200	—	—	21,952	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	53,152

* Gallons Oil used.

TABLE IV
FACTORY ANALYTICAL DATA—1958 CROP

	Mony- musk	Rich- mond/ Llan- dover	Jamaica Sugar Estates	Frome	New Year month	Car- manas	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	By- brook	Serge Island	Vale Royal	Apple- ton	Hamp- den	Bar- nard Lodge	Holland	Long Pond	Totals and Averages
Cane																					
Pol %	11.16	10.40	11.45	12.91	11.79	11.25	11.35	13.44	14.28	13.03	10.43	11.99	13.25	13.20	12.05	13.63	12.39	12.23	12.42	11.66	12.15
Fibre %	13.82	13.25	14.72	13.53	15.38	13.37	15.68	13.77	12.60	13.40	16.09	13.87	13.92	15.24	14.09	13.07	15.12	15.10	14.70	14.90	14.21
Bagasse																					
Pol %	3.33	1.73	2.67	2.48	2.62	2.06	2.59	2.89	2.78	2.92	1.94	3.06	2.75	2.54	2.95	2.95	2.81	2.91	3.29	3.81	2.60
Moisture % ..	51.85	46.53	45.06	48.40	47.74	46.97	48.70	47.50	46.14	48.13	45.40	48.66	45.12	46.28	47.11	46.29	47.98	48.90	46.78	46.51	48.17
Juices																					
First Exp. °Brix	17.35	16.23	17.72	19.28	18.03	17.45	18.23	19.68	20.07	19.73	17.40	18.46	19.25	19.82	17.96	20.19	19.14	19.03	19.19	17.78	18.51
Pol %	13.74	12.85	14.54	16.25	14.78	14.57	15.06	17.03	17.67	16.74	14.01	15.25	16.52	17.17	15.19	17.80	16.11	15.88	15.65	14.90	15.37
App. Purity ..	79.22	79.17	82.05	84.28	81.97	83.51	82.61	86.53	88.04	84.85	80.52	82.60	85.82	86.63	84.58	86.68	84.17	83.45	81.55	83.90	83.03
Absolute																					
°Brix	77.46	77.11	79.44	82.26	79.93	81.47	79.90	84.13	85.82	82.44	77.59	80.05	84.01	84.77	82.53	84.35	81.75	81.23	79.16	81.69	80.97
App. Purity ..	16.11	13.45	15.05	16.16	16.30	14.26	15.52	16.94	16.50	16.03	14.97	14.80	16.06	16.48	14.78	16.14	16.13	15.50	16.03	14.78	15.76
Mixed																					
App. Purity ..	77.82	77.40	80.05	82.74	80.25	81.76	80.09	84.53	86.13	82.91	77.91	80.45	84.43	85.13	82.88	84.63	82.15	81.61	79.40	82.11	81.33
R.S. Pol Ratio ..	10.06	9.79	10.29	8.63	9.04	7.80	9.71	5.80	4.45	5.50	7.80	9.03	7.45	5.95	5.49	7.33	—	6.26	8.90	9.37	8.39
Last Exp.																					
°Brix	3.88	2.34	5.53	4.96	4.34	5.06	5.11	4.89	4.40	5.24	6.48	5.76	4.42	5.87	5.80	5.19	5.26	6.71	9.52	8.64	—
App. Purity ..	72.14	71.64	71.79	74.48	75.80	74.54	75.54	79.30	80.68	76.04	71.00	75.41	77.46	79.22	78.15	79.81	76.52	76.75	76.39	78.22	—
Evaporator Supply																					
°Brix	16.15	13.69	15.00	16.10	16.03	13.09	15.41	17.36	16.68	16.38	14.97	15.10	16.04	17.04	12.50	16.70	15.93	15.41	15.80	14.81	—
App. Purity ..	78.81	77.72	80.60	85.11	81.46	80.09	81.31	84.71	86.99	83.55	78.85	81.47	85.36	85.74	84.00	85.57	81.96	82.80	78.74	82.53	—
Syrup																					
°Brix	55.90	65.87	58.64	59.18	61.76	62.33	58.27	57.17	61.31	65.42	57.51	66.90	87.45	57.31	59.95	64.36	59.41	64.30	61.08	51.83	—
App. Purity ..	73.49	73.04	81.53	83.95	80.60	82.01	81.38	85.33	87.76	84.44	78.97	82.45	85.63	86.21	84.74	86.31	83.17	83.65	80.08	83.19	—
Filter Cake																					
Pol %	2.25	4.30	4.44	1.20	3.18	1.88	2.26	2.83	4.14	1.85	2.05	1.68	1.88	2.09	2.88	1.68	3.84	2.26	5.43	4.70	2.27
Moisture % ..	76.60	73.84	—	77.22	75.96	71.17	73.76	73.36	60.13	74.28	66.00	74.33	75.29	76.54	66.11	76.20	70.43	73.65	60.12	—	74.41
Sugars																					
(Export) Pol % ..	97.03	—	—	96.82	97.44	—	97.13	97.28	97.20	97.18	96.81	97.25	97.43	97.32	—	97.31	97.58	97.56	96.49	97.48	—
(All) Pol % ..	97.69	95.96	97.18	96.81	97.51	97.32	97.13	97.30	97.53	97.18	96.66	97.19	97.40	97.32	97.02	96.99	97.56	97.58	96.21	97.43	97.21
Export Moisture%																					
(All) Moisture%	0.75	—	—	0.76	0.72	—	0.71	0.72	0.99	0.82	0.85	0.66	0.75	0.79	—	0.84	0.82	0.86	0.81	0.64	—
Final Molasses																					
(All) Moisture%	0.58	1.05	0.93	0.76	0.71	0.80	0.71	0.72	0.96	0.82	0.86	0.66	0.74	0.79	0.70	0.87	0.82	0.87	0.83	0.64	0.79
°Brix	92.65	86.69	87.19	92.31	90.46	92.04	86.79	87.83	91.26	90.81	89.39	89.12	89.40	87.22	88.00	84.72	88.64	91.58	85.57	86.55	90.20
App. Purity ..	33.92	34.87	31.63	31.17	34.72	34.46	31.97	31.50	33.96	32.32	33.18	30.27	31.94	32.61	31.44	32.46	32.24	36.73	38.35	31.20	32.53

TABLE V
FACTORY CONTROL DATA—1958 CROP

Control Classification	Monymusk	Richmond/Llan- Sugar dovory	Jamaica Sugar Estate	Frome	New Var- mouth	Cay- mans	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	Bye- brook	Serge Island	Vale Royal	Apple- ton	Hamp- den	Ber- mond Lodge	Holland	Long Pond	Totals and Averages
Cane																					
Fibre/Pol Ratio ..	1.24	1.27	1.39	1.05	1.30	1.19	1.33	1.02	0.88	1.03	1.54	1.16	1.05	1.15	1.17	0.96	1.22	1.23	1.18	1.28	1.17
*Tons Cane/Ton 96° Sugar ..	10.69	11.20	10.10	8.63	10.23	10.28	10.49	8.72	7.80	8.82	11.37	9.79	8.49	8.50	9.54	8.21	9.38	9.69	10.02	10.13	9.50
Demerara Index ..	21.85	21.80	21.55	21.44	22.02	21.53	21.84	22.16	22.08	21.85	21.80	21.78	21.74	21.70	21.69	22.06	21.77	21.92	22.44	21.79	21.65
Java Ratio ..	81.22	80.93	78.75	79.45	79.77	77.21	75.37	78.32	80.31	77.84	74.45	78.42	80.21	76.88	79.33	77.89	76.91	77.02	79.38	78.26	79.05
Milling																					
Tons Cane/Hour ..	157.51	31.95	67.63	174.26	63.40	41.36	43.48	29.85	33.25	27.91	59.61	66.49	45.77	37.44	38.99	46.46	53.33	75.32	16.57	27.39	61.93
Tons Fibre/Hour ..	21.75	4.23	9.96	23.57	9.75	5.53	6.82	4.11	4.19	3.74	8.47	9.22	6.37	5.70	5.21	5.92	8.06	11.45	2.44	4.08	8.80
Imbibition % Cane ..	14.06	21.64	17.40	19.43	15.80	18.47	17.22	16.41	20.61	19.89	19.17	22.43	19.36	18.78	20.19	20.22	18.14	21.25	19.90	17.23	18.13
Imbibition % Fibre ..	101.74	163.27	118.17	143.68	102.71	138.16	109.87	119.14	169.63	148.41	94.23	162.03	139.08	123.26	143.34	154.71	119.97	140.78	135.41	115.60	127.58
Pol Extraction ..	93.57	95.70	93.30	94.63	92.99	95.11	92.54	93.94	95.13	93.74	94.24	92.61	94.36	94.20	92.88	94.31	92.91	92.41	92.03	93.97	94.22
Reduced Pol Extraction ..	94.28	95.98	94.45	95.10	94.49	95.47	94.27	94.68	95.17	94.22	95.71	93.36	95.02	95.39	93.89	94.59	94.30	93.90	93.39	91.82	95.01
Absolute Juice Lost % Fibre ..	40.10	28.15	38.32	34.32	38.57	31.88	40.12	37.95	33.78	40.46	30.04	46.51	34.88	32.26	42.80	37.84	39.80	42.67	46.25	57.29	34.90
Bagasse % Cane ..	30.76	25.95	28.74	28.04	31.61	26.68	32.73	28.20	24.99	28.01	30.92	27.13	27.13	30.17	28.69	26.13	32.14	31.91	30.05	30.66	29.39
Time Grinding % Gross C.T. ..	77.07	63.95	64.81	92.36	63.78	70.03	75.50	81.16	91.36	69.61	66.36	61.14	84.22	72.31	65.95	72.53	77.38	76.27	59.45	72.14	72.16
Purity Drop																					
First Expresed-Mixed ..	1.40	1.77	2.00	1.54	1.72	1.75	2.52	2.00	1.02	1.94	2.61	2.15	1.39	1.50	1.70	2.05	2.02	1.84	2.15	1.79	1.65
First Expresed-Last Expresed ..	7.08	7.53	10.26	9.82	6.07	8.97	7.07	7.23	7.36	8.81	9.52	7.19	8.26	7.41	6.43	6.87	7.65	6.70	5.16	5.83	—
Boiling House																					
Tons Brx/Hour ..	21.13	4.11	9.02	25.74	8.66	5.42	5.70	4.46	5.24	4.11	6.64	9.17	6.78	5.47	5.00	6.88	7.13	10.50	2.38	3.25	8.66
*Tons 96° Sugar/Hour ..	14.73	2.85	6.70	20.41	6.20	4.02	4.14	3.42	4.26	3.16	4.63	6.79	5.39	4.40	3.88	5.37	5.42	7.53	1.65	2.52	6.52
Filter Cake % Cane ..	2.98	1.89	1.45	2.44	2.09	2.91	1.76	2.78	1.88	1.68	2.83	2.91	3.53	2.91	1.84	2.30	2.97	2.74	1.42	1.19	2.49
*Gallons Final Molasses at 88° Dryx/Ton 96° Sugar ..	73.52	66.36	59.69	44.96	52.75	50.20	50.94	47.73	34.25	45.96	73.21	61.03	43.92	41.39	49.05	48.52	56.96	49.57	61.83	50.28	53.74
Efficiency (W.C.) ..	96.40	97.41	98.30	100.08	94.37	95.21	96.44	93.65	96.02	96.65	96.64	97.61	97.10	97.05	97.51	97.67	96.64	95.65	93.51	98.47	96.36
Efficiency (S.J.M.) ..	95.70	96.21	97.49	99.10	93.63	94.49	95.66	93.13	96.38	95.84	95.65	96.76	96.41	96.30	96.61	96.87	96.03	94.94	92.30	97.72	97.49
Purity Rise: Mixed-Syrup ..	0.67	0.64	1.48	1.21	0.35	0.26	1.29	0.80	1.64	1.53	1.06	2.00	1.20	1.08	1.86	1.68	1.02	2.04	0.68	1.08	—
Pol Balance (In Cane)																					
% in Sugars ..	79.92	82.35	82.57	86.80	79.12	82.49	80.22	81.46	85.45	83.13	80.75	81.52	84.87	85.04	83.20	See	81.99	80.34	77.12	80.87	82.72
% in Molasses ..	12.06	10.87	9.49	7.29	8.76	9.17	7.52	7.37	6.24	7.44	11.97	9.05	7.30	6.85	7.71	Note	9.10	8.93	10.61	7.65	8.70
% in Filter Cake ..	0.59	0.78	0.56	0.22	0.66	0.51	0.35	0.63	0.65	0.24	0.66	0.38	0.50	0.46	0.44	Below	0.92	0.60	0.63	0.48	0.47
% in Bagasse ..	6.43	4.30	6.70	5.37	7.01	4.59	7.46	6.08	4.87	6.26	5.78	7.39	5.64	5.80	7.02	7.02	7.09	7.59	7.97	10.03	6.29
% Undetermined ..	1.00	1.70	0.75	0.23	4.55	2.94	4.35	4.53	2.93	2.93	0.96	1.56	1.69	1.55	1.63	1.63	0.90	2.75	3.67	0.97	1.82

* Calculated on basis of Copps Tables, Spencer Meade p. 764 with Molasses Purity as reported by the Factories.

Monymusk's Pol Balance to read:—
 % in Sugars .. 79.92
 % in Molasses .. 11.72
 % in Filter Cake .. 0.58
 % in Bagasse .. 6.43
 % Undetermined .. 1.00

Appleton's Pol Balance to read:—

% in Sugars .. 83.23
 % in Molasses .. 6.47
 % in Filter Cake .. 0.28
 % in Bagasse .. 6.69
 % Undetermined .. 1.32

Clarified and Cloudy Juice .. 0.13
 Ayr and B Molasses .. 3.78
 Syrup .. 1.16
 Undetermined .. 1.32

TABLE VII
NON-FACTORY STOPPAGES AND TIME GRINDING % GROSS GRINDING TIME. 1958 CROP
(as reported by the Factories)

Factories	Field Stoppages	Trans- portation	Pre- meditated	Rain	Labour	End of Run	Net Grinding Time	Time Grinding
Monymusk	0.95	0.21	3.22	11.74	—	3.95	79.93	77.07
Richmond/Llandovery ..	6.48	—	0.81	1.40	8.15	9.00	74.16	63.95
Jamaica Sugar Estates ..	6.07	0.08	1.92	10.76	4.00	7.71	69.46	64.81
Frome	0.67	0.03	4.42	—	—	2.52	92.36	92.36
New Yarmouth	2.89	—	3.96	1.57	19.81	5.76	66.01	63.78
Caymanas	2.11	—	3.68	3.70	6.01	7.04	77.46	70.03
Innswood	7.67	—	1.35	—	—	6.88	84.10	75.50
Barnett	2.93	—	3.06	—	—	7.63	86.38	81.16
Worthy Park	2.13	—	1.17	—	—	—	96.70	91.36
Rose Hall	5.24	—	4.87	0.73	—	9.83	79.33	69.61
Gray's Inn Central	12.51	—	2.99	—	—	11.57	72.93	66.86
Sevens	16.63	—	0.92	2.85	6.89	3.24	69.47	61.14
Bybrook	0.57	—	0.46	4.61	—	6.13	88.23	84.22
Serge Island	5.25	—	2.06	4.66	—	8.58	79.45	72.31
Vale Royal	7.62	—	2.27	0.14	10.25	6.37	73.35	65.95
Appleton	0.87	—	1.07	3.67	1.85	7.09	85.45	72.83
Hampden	5.23	—	2.42	0.30	—	5.22	86.83	77.38
Bernard Lodge	2.49	—	1.57	10.07	—	5.16	80.71	76.27
Holland	3.74	—	1.38	1.06	1.60	8.27	83.95	59.45
Long Pond	0.57	—	3.37	0.15	6.11	5.88	83.92	72.14
Island Averages	4.40	0.02	2.39	3.15	3.67	6.28	80.09	72.16

NOTE. Gross Grinding Time = Interval between commencement and termination of milling.
 Nett Grinding Time = Possible Grinding Time.
 Time Grinding = Actual Grinding Time.

TABLE VIII
FACTORY STOPPAGES AND TIME GRINDING AND NETT GRINDING TIME

Factories	Mechanical	Electrical	Chokes	Juice room	Steam	Other reasons	Time grinding
Monymusk	2.51	—	1.05	0.01	0.01	—	96.42
Richmond/Llandovery ..	8.90	1.02	0.30	2.49	0.58	0.43	86.23
Jamaica Sugar Estates ..	3.07	0.87	0.49	—	0.26	2.00	93.31
Frome	1.65	0.25	0.16	0.04	0.24	0.20	97.46
New Yarmouth	1.16	1.12	0.33	0.05	0.58	0.05	96.62
Caymanas	7.58	0.10	—	1.65	0.25	—	90.42
Innswood	4.69	0.22	1.02	2.39	1.29	0.62	89.77
Barnett	7.19	—	0.34	0.63	1.03	0.82	89.99
Worthy Park	4.15	—	0.46	0.68	0.24	—	94.47
Rose Hall	9.05	—	0.52	0.11	2.32	0.26	87.74
Gray's Inn Central	3.19	0.24	0.87	2.48	0.32	1.23	91.67
Sevens	6.98	0.63	0.73	0.45	0.74	2.46	88.01
Bybrook	2.56	0.14	1.29	0.03	0.23	0.31	95.44
Serge Island	5.58	0.18	0.03	1.63	0.02	1.56	91.00
Vale Royal	5.13	1.24	0.80	0.60	0.23	2.10	89.90
Appleton	10.83	0.24	1.41	1.26	0.56	0.46	85.24
Hampden	6.62	—	0.86	2.50	0.44	0.47	89.11
Bernard Lodge	4.17	—	0.01	—	0.03	1.29	94.50
Holland	15.51	0.01	0.60	0.85	13.53	1.47	68.03
Long Pond	11.19	0.45	0.19	0.96	0.81	0.44	85.96
Island Averages.. ..	6.00	0.38	0.65	0.84	1.25	0.78	90.10

SUMMARY

Time Grinding	.. 52017.04 Hours	
Factory Stoppages	.. 5715.14 "	= 7.93% Gross Grinding Time
Nett Grinding Time	.. 57732.18 "	
Non-Factory Stoppages	.. 14348.47 "	= 19.91% Gross Grinding Time
Gross Grinding Time	.. 72081.05 Hours	

PART 3 DISTILLERY DATA—1958 CROP

TABLE I
DISTILLERY CAPACITIES

	Rich- mond/ Llan- dover	Mon- musk	Jamaica Sugar Estate	Frome	New Var- mouth	Cay- manas	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Gray's Inn Central	Sevens	By- brook	Serge Island	Vale Royal	Apple- ton	Hamp- den	Ber- nard Lodge	Holland	Long Pond	Totals and Averages
Fermentation																					
Vats	30	362,000	125,000	43	37	15	15	17	10	12	9	24	15	10	20	22	58	44	14	90	532
Total Capacity	gal.	gal.	gal.	171,800	61,500	75,000	120,000	36,000	20,000	39,000	90,000	42,405	42,600	70,000	34,250	82,800	98,000	132,000	12,600	174,000	1,839,835
Dunder Boxes	4	12,000	65,000	7	5	2	4	10	5	12	—	18,235	4	3	8	—	5	12	3	13	118
Capacity	gal.	gal.	gal.	19,600	5,000	42,400	10,000	5,000	9,000	14,400	—	957	7,000	10,000	8,800	—	10,000	36,000	2,500	12,000	307,433
Cooling Surface	sq. ft.	—	160	—	—	—	—	—	—	—	—	—	—	—	—	—	840	—	—	—	1,947
Distillation																					
Wash Preheater	No. 1																				
Capacity	gal.	2,200	1,500	3,800	4,000	3,000	—	—	1,800	—	Cont.	2,417	1,800	—	850	300	—	3,000	—	—	23,867
Capacity	No. 2	135	851	166	—	100	—	—	—	—	330	51	60	—	40	—	—	200	—	—	1,963
Capacity	sq. ft. H.S.	135	1,585	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3,700
Capacity	sq. ft. H.S.	135	1,585	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	720
Still No. 1																					
Loading Capacity	gal.	2,000	1,500	1,200	1,500	1,500	2,500	1,800	1,300	1,500	—	1,780	1,237	1,500	1,500	1,500	2,000	1,380	1,000	1,200	30,397
L.W. retort charges	gal.	135	104	72	150	105	—	200	65	100	—	188	240	98	80	90	—	112	—	—	—
H.W. retort charges	gal.	250	180	150	180	175	300	220	150	180	—	230	140	175	100	180	250	168	120	120	3,618
H.W. retort charges	sq. ft. H.S.	200	160	120	150	150	250	180	120	120	—	190	120	140	64	150	200	140	100	100	2,384
Condenser	sq. ft. H.S.	—	766	—	—	—	—	470	—	—	—	355	753	185	—	—	—	—	—	—	—
Condenser	sq. ft. C.S.	—	2,660	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Still No. 2																					
Loading Capacity	gal.	2,000	1,500	2,000	1,500	1,500	—	—	—	1,500	—	1,780	1,237	3,500	1,500	1,400	1,500	1,380	—	800	25,597
L.W. retort charges	gal.	135	104	120	150	105	—	—	—	180	—	188	240	98	80	108	—	112	—	—	—
H.W. retort charges	gal.	250	180	150	180	175	300	220	150	180	—	230	140	175	100	160	300	168	100	100	3,003
H.W. retort charges	sq. ft. H.S.	200	160	120	150	150	250	180	120	120	—	190	120	140	64	140	150	140	80	80	2,394
Condenser	sq. ft. H.S.	—	766	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condenser	sq. ft. C.S.	—	1,916	—	—	—	—	—	—	—	—	351	752	220	—	—	—	—	—	—	—
Still No. 3																					
Loading Capacity	gal.	2,000	1,500	1,800	1,200	1,500	—	—	—	—	—	—	—	—	—	1,400	1,500	1,380	—	1,500	13,280
L.W. retort charges	gal.	135	104	86	115	105	—	—	—	—	—	—	—	—	—	108	—	112	—	—	—
H.W. retort charges	gal.	250	180	140	140	175	—	—	—	180	—	—	—	—	—	160	200	168	150	150	1,663
H.W. retort charges	sq. ft. H.S.	200	160	120	130	150	—	—	—	120	—	—	—	—	—	140	150	140	180	180	1,390
Condenser	sq. ft. H.S.	—	766	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condenser	sq. ft. C.S.	—	1,916	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Still No. 4																					
Loading Capacity	gal.	2,000	1,500	1,800	1,200	1,500	—	—	—	—	—	—	—	—	—	1,200	1,000	1,500	—	—	9,000
L.W. retort charges	gal.	135	104	88	115	105	—	—	—	—	—	—	—	—	—	150	150	180	—	—	—
H.W. retort charges	gal.	250	180	140	140	175	—	—	—	—	—	—	—	—	—	160	150	180	—	—	1,150
H.W. retort charges	sq. ft. H.S.	200	160	120	130	150	—	—	—	—	—	—	—	—	—	130	80	150	—	—	930
Condenser	sq. ft. H.S.	—	766	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condenser	sq. ft. C.S.	—	1,916	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Still No. 5																					
Loading Capacity	gal.	2,000	1,500	2,000	1,200	1,500	—	—	—	—	—	—	—	—	—	2,000	—	2,000	—	—	6,000
L.W. retort charges	gal.	135	104	120	150	105	—	—	—	—	—	—	—	—	—	171	—	150	—	—	—
H.W. retort charges	gal.	250	180	140	140	175	—	—	—	—	—	—	—	—	—	275	—	250	—	—	765
H.W. retort charges	sq. ft. H.S.	200	160	120	130	150	—	—	—	—	—	—	—	—	—	220	—	200	—	—	640
Condenser	sq. ft. H.S.	—	766	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condenser	sq. ft. C.S.	—	1,916	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Still No. 6																					
Loading Capacity	gal.	2,000	1,500	2,000	1,200	1,500	—	—	—	—	—	—	—	—	—	2,000	—	2,000	—	—	4,000
L.W. retort charges	gal.	135	104	120	150	105	—	—	—	—	—	—	—	—	—	171	—	150	—	—	291
H.W. retort charges	gal.	250	180	140	140	175	—	—	—	—	—	—	—	—	—	275	—	250	—	—	515
H.W. retort charges	sq. ft. H.S.	200	160	120	130	150	—	—	—	—	—	—	—	—	—	220	—	200	—	—	440
Condenser	sq. ft. H.S.	—	766	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Condenser	sq. ft. C.S.	—	1,916	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Continuous Still																					
Number of columns	gal.	48,000	—	2	5,000	1	40,000	2	—	—	1	—	—	—	—	4*	—	—	—	3	15
Wash/24 Hours	gal.	—	—	—	—	—	—	—	—	—	40,000	—	—	—	—	—	—	—	—	1,200	174,200

* 2 Wash

1 Rectifier

1 Purifier

TABLE II
DISTILLERY QUANTITIES—1958 CROP

	Monymusk	Richmond/ Llandoverly	Frome	New Yarmouth	Caymanas	Innswood	Barnett	Worthy Park	Rose Hall	Gray's Inn Central
Cane Juice Used	tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.	tons
Total Sugars as R.S.	430	90,000	147,706	280	58,774	97,463	—	—	—	—
Molasses Used	tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.	tons
Equivalent 88° Brix	1,368,524	1,142	4,753	3,650	548,722	838,011	500	1,333	806	4,374
Total Sugars as R.S.	1,483,288	1,726,731	759,483	574,140	838,011	415,061	77,100	203,365	131,902	671,203
Total Sugars Used as R.S.	11,890,055	1,437,821	6,846,694	4,759,209	838,011	415,061	765,000	206,563	125,153	621,489
Wash: Set	9,600,000	1,153,500	4,931,000	3,080,700	3,509,265	3,045,503	453,100	914,000	690,000	4,946,989
Distilled	8,900,000	1,171,500	4,718,200	—	3,509,265	3,045,503	376,200	—	644,000	4,557,815
Rum as Distilled	tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.	tons
Bulk	227,451	47,989	269,157	182,875	76,293	146,659	25,098	49,402	26,906	—
Proof	66,238	66,238	376,820	256,095	114,256	235,269	34,886	—	39,850	—
as Packaged Bulk	316,612	45,894	—	180,982	—	—	25,144	—	35,972	—
Alcohol as Distilled	tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.	tons
Bulk	210,592	—	265,243	—	19,470	175,531	—	—	—	179,379
As Packaged Bulk	—	—	—	—	32,439	—	—	—	—	—
As Distilled Proof	308,821	—	—	—	—	—	—	—	—	301,490
Absolute Alcohol	gal.	—	—	—	—	—	—	—	—	172,054
Anhydrous Alcohol	gal.	—	—	—	—	—	—	—	—	—

TABLE II—continued

	Sevens	Bybrook	Serge Island	Vale Royal	Appleton	Hampden	Bernard Lodge	Holland	Long Pond
Cane Juice Used	Tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.
Total Sugars as R.S.	—	—	—	45	2,942	584	11	—	4,363
Molasses Used	tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.
Equivalent 88° Brix	1,963	1,475	1,384	950	3,388	2,396	4,073	350	6,209
Total Sugars as R.S.	299,684	255,100	212,318	146,338	513,890	374,995	611,460	54,469	984,964
Total Sugars Used as R.S.	302,249	255,100	211,765	142,480	474,651	365,726	650,911	51,913	926,053
Wash: Set	2,556,091	1,892,284	1,768,047	1,223,980	3,289,102	5,210,860	5,210,860	—	7,794,124
Distilled	2,285,449	1,290,191	1,232,271	804,000	3,672,465	2,380,400	4,146,650	244,800	5,739,400
Rum as Distilled	tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.
Bulk	68,540	65,201	61,833	32,971	220,716	139,732	194,043	8,392	324,557
Proof	102,103	97,475	92,696	48,797	334,889	192,230	287,183	12,504	452,314
as Packaged Bulk	—	69,715	—	31,954	—	133,260	131,990	6,552	321,145
Alcohol as Distilled	tons	gal.	lb.	tons	gal.	lb.	tons	gal.	lb.
Bulk	—	—	—	—	73,852	—	—	—	—
As Packaged Bulk	—	—	—	—	—	—	—	—	—
As Distilled Proof	—	—	—	—	—	—	—	—	—
Absolute Alcohol	gal.	58,261	—	—	—	—	—	—	—
Anhydrous Alcohol	gal.	—	—	—	—	—	—	—	—

TABLE III
DISTILLERY ANALYTICAL AND CONTROL DATA

	Monymusk	Frome	New Yarmouth	Cay- manas	Innswood	Worthy Park	Gray's Inn Central	Sevens	Bybrook	Serge Island	Vale Royal	Bernard Lodge	Long Pond
Cane Juice													
Total Sugars as R.S. %	15.35	16.55	—	—	—	—	—	—	—	—	10.41	11.45	13.95
°Brix	16.95	16.34	—	—	—	—	—	—	—	—	13.56	12.30	14.55
Melasses													
Total Sugars as R.S. %	57.64	64.21	53.21	54.83	56.80	57.13	58.72	57.75	57.38	57.03	57.49	57.03	56.12
°Brix	93.02	92.11	90.62	92.60	94.26	91.70	88.15	88.39	89.70	87.22	86.22	91.35	85.74
Dunder													
% Acidity (as Acetic)	13.32	12.70	11.60	—	8.08	13.44	—	—	14.90	14.80	13.98	14.75	19.53
pH	1.40	1.73	4.04	—	0.89	1.41	—	—	1.16	1.16	1.36	1.65	2.98
Live Wash													
Total Sugars as R.S. %	18.51	18.23	18.05	24.00	16.82	18.90	16.44	16.72	19.03	18.30	17.80	17.73	17.75
% Acidity (as Acetic)	10.54	13.23	11.43	12.91	8.65	10.23	10.93	10.87	12.61	10.09	10.20	11.73	11.03
pH	0.55	0.38	4.79	0.40	0.65	0.61	—	0.45	0.16	0.37	1.04	0.67	1.75
Dead Wash													
Total Sugars as R.S. %	9.94	8.21	8.44	17.30	6.75	10.23	6.43	7.88	9.26	9.00	9.43	7.81	8.23
% Acidity (as Acetic)	1.24	1.52	1.04	0.91	0.89	0.92	0.64	1.07	1.14	—	1.19	0.86	0.85
pH	—	—	3.83	—	0.25	1.16	—	1.21	0.38	0.89	1.32	1.28	3.04
% Proof Spirit	7.26	8.53	8.75	6.88	7.73	—	7.23	8.24	8.27	8.16	7.36	8.20	9.10
Rum													
Overproof	—	40.00	40.00	48.00	60.42	49.00	68.07*	48.97	49.50	49.91	48.00	48.00	39.37
Fermentation													
Attenuation %	8.57	10.02	9.61	6.70	10.17	8.67	10.01	8.84	9.77	9.30	8.37	9.81	9.52
Lb. R.S./gal. Abs. Alc. in Wash	88.99	93.75	90.90	—	59.71	91.00	94.14	90.16	90.86	—	88.33	92.67	92.28
%	30.01	23.39	30.35	—	36.89	—	28.21	24.74	31.12	30.81	37.06	25.34	30.71
Distillation													
Gal. Abs. Alc. in Dist./gal. Abs. Alc. in Wash	0.94	0.94	0.95	—	0.99	—	0.92	0.56	0.91	0.92	—	0.85	0.87
Overall													
Lb. R.S./gal. Abs. Alc. in Distillate	31.82	32.30	32.58	—	37.37	41.30	30.83	43.87	34.09	33.42	44.33	31.82	35.47
Recovery % Theoretical	48.33	46.08	47.21	—	41.16	37.24	49.90	33.06	45.91	42.52	53.42	32.82	42.52
Lb. R.S./gal. Proof Alc. in Distillate	18.14	18.43	18.59	—	17.52	23.57	19.08	25.03	19.41	19.07	25.50	18.15	20.24
Gal. Mol. at 88° Brix/gal. Proof Alcohol	2.21	2.02	2.24	2.58	1.76	2.81	2.06	2.96	2.31	2.38	2.92	2.37	3.05

* Alcohol

PRINTED BY
W. HEFFER & SONS LTD.,
CAMBRIDGE, ENGLAND